PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 56

CONTENTS

TRADE NAME	MODEL	FOLDER NO.
Aircastle	10002	494-1
Aircastle	10003-I	494-2
Aircastle	147114	494-3
Airline	84KR-1520A	494-4
Airline	84WG-2714F, G, H, J	494-5
Browning	RJ-12A, RJ-14A	494-6
Brunswick	D-1000, D-1100, T-9000	494-7
Co-op	6AWC2, 6AWC3, 6A47WCR, 6A47WT, 6A47WTR	494-8
Dewald	B-614	494-9
Emerson	602 (Ch. 120072A, 120082A)	494-10
General Electric	150	494-11
General Electric	160	494-12
Kaiser-Frazer	200002	494-13
Majestic	7FM877, 7FM888 (Ch. 7C11D)	494-14
Meissner	TV-1 (Ch. 24TV) Tele. Rec.	494-15
Motorola	68X11, 68X12 (Ch. HS-127), 68X11A, 68X12A (Ch. HS-127A)	494-16
Motorola	78F11, 78F11M (Ch. HS-150), 78F12M (Ch. HS-155)	494-17
Philco	49-501, 49-501-I	494-18
Philco	49-901	494-19
RCA Victor	8V90 (Ch. RC-618, RC-618A), 8V91 (Ch. RC-616A, RC-616H)	494-20
Silvertone	8103 (Ch. 110.473)	494-21
Tele-Tone	TV149 Tele. Rec.	494-22
Trav-Ler	6050	494-23
Webster (Telehome)	W606M	494-24

The PHOTOFACT Servicer

Feb. 15. 1949 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 6, No. 56

THE NEW RCA PHONOGRAPH AND RECORD IS ANNOUNCED

First official information on the new RCA 45 RPM changer, and the small diameter discs, was contained in the January 11 RCA press release. Briefly, here are the most important points included:

1 - The turntable speed employed is 45 revolutions per minute.

2 - The disc, of non-breakable vinyl plastic, is approximately 7" in diameter and incorporates a 1 1/2-inch center spindle hole.

3 - A new, extremely fast record-changing system is employed. Record support and dropping mechanisms are built into the 1 1/2-inch center spindle. The press release indicates a pronounced simplification in design and operation.

4 - The record changer holds up to eight records. With each record capable of playing up to 5 1/4 minutes, a total of 42 minutes' playing time may be available per loading.

5 - The unit employs a small tone arm exerting a pressure of 5 grams on the record. The pickup unit is equipped with a permanent type sapphire point, and although no indication is given as to pickup type, it is assumed to be of the crystal variety.

6 - Unique disc design, providing a greater thickness or "collar" at the label area, permits operation without playing surfaces of adjacent records touching each other, thus protecting the grooves from surface scratches or damage.

In terms of entertainment policy, the announcement points out that there will be no lessening of attention to the conventional 78 RPM market. It also states that all new material is being recorded simultaneously at 78 and 45 RPM and that subsequent record releases will be available in both types. No price schedule has yet been announced on either players or discs. Present plans are for introduction of the units in early spring.

In terms of industry effect, it might be noted that Mr. Joseph B. Elliot, Vice-President In Charge Of The RCA Victor Home Instrument Department, stated that the new discs and playing equipment had been demonstrated to other phonograph and record manufacturers, as well as phonograph equipment manufacturers. The announcement quotes him as follows:

> "Manufacturers who have witnessed these demonstrations have expressed extreme enthusiasm, and many are now planning to adopt the new system, manufacturing rights to which are available to the entire industry in accordance with long-established RCA practice."

It should be very interesting to watch developments in the record industry. With the variations in turntable speed, disc size, tone arm pressure, and cartridge and needle styles to deal with, repair of record changers and players promises to be profitable, if somewhat exacting, work.

The Howard W. Sams Automatic Record Changer Service Manual, Volume 2 (1948), scheduled for publication in February, includes coverage on phonograph mechanisms marketed to date. This includes the "Long Play" (LP) Changers, and the latest Wire and Tape Recorders.

We also plan to include in each copy a card, or certificate, which, when properly executed, will provide service instructions on the new RCA 45RPM system. This supplementary material will be available at no additional charge, upon commercial introduction of this new changer.

* * *

Several days ago, we had the opportunity of talking to Frank J. Dieli, Asst. Chief Engineer of the Garod Radio Corp. We had seen many favorable press reviews in the introduction of their new Tele-Zoom* television receivers, and consequently, asked if he could give us a write-up of this new feature. His gracious response was the pertinent technical description which follows.

* T.M.

NEW HOWARD W. SAMS PUBLICATIONS

TELEVISION ANTENNA GUIDE (TAG-1)

We take pride in announcing the first of a series of practical authoritative television books, designed to assist radio technicians, dealers, installation men and others interested in commercial television in developing more efficient techniques for use in their activities.

The first book in this series is "Television Antennas - Design, Construction, Installation and Trouble Shooting Guide". Written by Donald A. Nelson, this work represents the culmination of 13 months' exhaustive study and checking of actual constructions and installations. The text includes material on how to select and install the antenna, and how to shoot trouble on such antenna installations. It also includes complete design data, manufacturers' specifications of commercial antennas, and a wealth of practical specific information on antenna mounting and transmission line considerations.

Tools and supplies essential to proper handling of television antenna installations are discussed in detail, and a complete analysis of the equipment necessary for outfitting a special installation truck is included, as is a major section on trouble shooting and solving interference problems.

Present indications are that the book will exceed 190 pages, with approximately 124 illustrations. It is scheduled for publication in March.

PHOTOFACT TELEVISION COURSE (TV-1)

The PHOTOFACT TELEVISION COURSE in book form (TV-1), announced in Servicer No. 51, is now available through your regular PHOTOFACT jobber. As indicated in the announcement, the book is made up of the complete series of Installments 1 through 15, plus a subject index of the book, a glossary of television terms, and a bibliography of television literature. Because of the wide-spread demand, we have produced it in bound book form for the benefit of those who would prefer to use it in this manner.

POSTWAR AUTO RADIO MANUAL (AR-1)

The Postwar Auto Radio Manual (AR-1) is a selective compilation of Photofact Folders covering almost all auto radio models produced since the war. The products of twenty-four manufacturers are included in the more than 300 pages of this volume. The book is profusely illustrated and additional sections are included which provide replacement vibrator listings for specific models of auto radio receivers, vibrator buffer capacitor values and representative buffer circuits. A physical and electrical descriptive section is provided which covers vibrators, vibrator power transformers, buffer capacitors, general utility auto capacitors, and automotive type loud speakers, of the manufacturers who participate in Photofact Folders.

* * *

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT FOLDER Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Company, Inc.

* * *

AUTOMATIC ATTP

Photofact Set 23, Folder 4

Receiver had loud hum. Filter capacitor checked O. K. I discovered that the 450 ohm resistor in the filament string (item 27) was not grounding properly. This resistor connects to a grounding lug anchored on the IF transformer stud. With time, the mounting nut works loose and the lug makes poor contact.

To repair, remove lug and solder resistor lead directly to chassis.

Submitted by: Ray Brown of Ray Brown Radio Service, 44 Arden St., New York 34, N. Y.

* * *

AUTOMATIC 613

Photofact Set 1, Folder 34

Complaint: Set is intermittent and can be made to cut in or out by jarring it.

While set was dead, the filter resistor (item 26) would heat up and smoke. B+ was apparently shorting, but no faulty capacitors could be found. It was then found that the B+ terminal on the trimmer A2 of the output IF transformer was touching the side of the can.

Remedy: Bending the trimmer in, away from the can, cured the trouble.

Submitted by: John T. Berry,
1910 South Joplin, Pittsburg, Kansas

GENERAL ELECTRIC 250
Photofact Set 4, Folder 13

Complaint: Strong continuous hum. Filters, buffers, and bypasses all checked O. K. Touching grounding spring on negative battery terminal stopped the hum. Volume control ground lead (through 2200 ohm resistor), and lead from charging plug are soldered to the spring. Bad ground contact allowed AC and vibrator ripple to enter the audio system.

Remedy: Reroute low side volume control lead to another chassis ground.

Submitted by: Ted Stewart, of Stewart Radio Repair, 1617 Parker St., Berkeley 3, Calif.

* * *

STEWART-WARNER A61P1
Photofact Set 42, Folder 23

Complaint: Neon indicator does not shut off in "AC-DC" or "Charge" positions.

Cause: Open section of bleed resistor (item 45) connecting from cathode of 35Z5GT charging rectifier (5) to ground. Stored charge in filter capacitor (item 7) keeps neon going for a long time.

Remedy: Replace bleed resistor.

Submitted by: Paul E. Frost, Penacook, New Hampshire

* * *

R. C. A. 66X13
Photofact Set 27, Folder 20

Complaint: Loud hum. Reproduction sounded as if the set had a defective output tube or bad filter capacitor. Both checked O. K. Investigation disclosed that the dial light terminal extended beyond the socket base, and shorted to the pilot light bracket. While possibly not a common fault it is hard to locate because of its hidden nature.

Remedy: Replace defective pilot lamp.

Submitted by: Clarence F. Miller, Scioto Trail, R. #3, Portsmouth, Ohio

ZENITH 12H090
Photofact Set 2, Folder 20

Complaint: Hum, dial light flicker, poor tone quality.

Cause: Check for improper grounding of power socket in radio chassis. The metal ring on this socket has several wires connected to it for ground connection.

Remedy: Solder strap connection to metal ring and to chassis for positive ground.

Submitted by: Byron S. Waite, Radio Service, 62 West Pine St., Canton, Ill.

* * *

MAGNAVOX CR190
Photofact Set 46, Folder 14

Complaint: Severe microphonic condition. Checking and changing tubes had no effect. Removing speaker from cabinet with chassis remaining, and rotation of speaker in different directions produced and killed howl. The trouble was isolated to the gang condenser.

Cause: Stator supports of oscillator section weakened.

Remedy: Strengthen supports by soldering a wide "V" shaped strip at both ends. Also check other section for possible resoldering. The trick is in keeping the stator in position during the repair.

Submitted by: Burk Radio Service, 1353 W. Second Ave., Columbus, Ohio

* * *

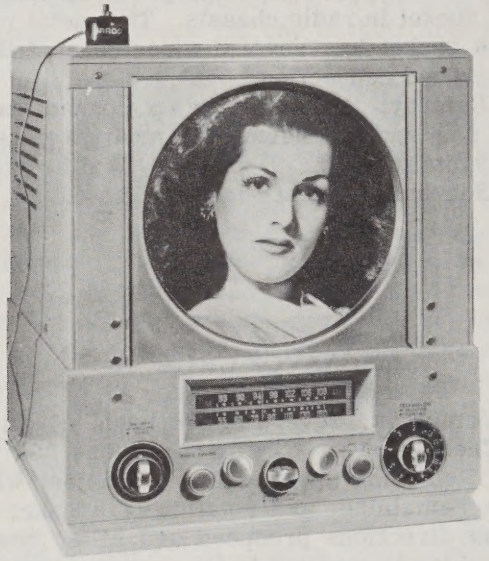
PHILCO 46-350 CODE 125
Photofact Set 10, Folder 24

Complaint: Tube burnout. After burning out 2 replacement tubes in these models, removed chassis and speaker from cabinets and found that the high voltage line running over base of the 1U5 tube socket had broken insulation and had evidently shorted to the socket filament terminal.

Remedy: Insulate and reroute high voltage lead.

Submitted by: Anthony G. Klein, Scribner, Nebraska

We believe the material particularly timely, in view of the present interest in expanded television images. The illustration accompanying this writeup shows the Garod "Bristol" or "Essex" Models 12TZ1 or 12TZ2 with the picture tube image in the expanded position. The push button controller is visible at the upper left (atop cabinet).



GAROD TELE-ZOOM TELEVISION RECEIVER

The Garod Tele-Zoom is so arranged that at the will of the viewer, a normal picture is obtained, which is essentially a rectangle with a ratio of 4 to 3, inscribed in the circular face of the Picture Tube; or the picture may be expanded uniformly to cover the entire screen area.

Of course, in so doing it is obvious that when the size is increased Vertically and Horizontally to maintain the proper proportion of height to width, or aspect ratio, to reproduce the picture as transmitted, the sides of the picture will necessarily fall past the edge of the tube and will be lost.

However, during a considerable part of the transmission of the program as in close-ups etc., that portion of the picture which is of interest is centered on the screen, hence only the background, which generally is of no significence is cut. When the Television camera is returned to long shots or groups, the viewer may switch back to the normal rectangular picture, restoring the full intelligence as transmitted, so that at all times, optimum use may be made of the full size of the screen.

Thus, for example, in the case of a 10" tube which has a nominal picture size of 6" by 8", the picture is expanded to cover the full usuable area of the tube, and becomes a circle of 9" diameter. Therefore, the picture height and width have both been increased one and one-half times; so that, that portion of the picture which remains, appears 2.25 times, or more than twice as large as was the original. This does not mean that the picture area has been increased by this factor, but only that whatever is seen on the face of the tube is enlarged to that extent.

Contrast this with the picture size normally obtained on a 12" tube, which is generally about 7" by 9 1/2". This gives a gain over the 10" tube in the size of the viewed object of approximately 1.4 times. Thus, greater utility is obtained by using a 10" tube with Tele-Zoom than is obtained with a 12" when operated in the conventional manner. Similarly, the 12" will give a greater blow-up than the normal 15", and the 15" will in turn give more than a conventional 20" picture tube.

This is accomplished simply by depressing a push button in a small plastic housing, connected to the Television receiver by a flexible cord 15 feet in length (or greater, if desired).

This push button switch is of the push-push type; that is, the first push will close the circuit, and the next will open it.

No indication is required since the picture size is its own indication.

Control is obtained thru this switch, which actuates a relay excited from the 6 volt filament supply. Thus, should the cord break or become detached, no shock or fire hazard is encountered; the relay will simply open, leaving the picture in the expanded position.

This relay is of sturdy trouble-free construction and controls four circuits. #It serves to alter the drive on the Horizontal and Vertical amplifiers, by switching the constants in these circuits. Automatic brightness, contrast and focus compensation is also obtained thru this relay, so that the only thing that changes as far as the viewer is concerned is the picture size. No manual readjustments are required.

Additional installation controls are included for Vertical size, Vertical Linearity and Horizontal Peaking (or Drive) for the expanded position, besides those furnished normally in the contracted position, so that the proper aspect ratio and linearity are maintained in both modes of operation.

Pat. Pend.

AIRCASTLE
MODEL 10002

AIRCASTLE
MODEL 10002

AIRCASTLE MODEL 10002

TRADE NAME	Aircastle, Model 10002
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	550-1600KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set left edge of pointer saddle 2" from left edge of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	400Ω carbon res.	High side to ant. terminal "A". Low side to terminal "G".	1600KC	Set left edge of pointer saddle 5-1/8" from calibration mark.	"	A5	Adjust for maximum output.
3	"	"	1400KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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DATE 2/49-#494-1 SET #56-FOLDER #1

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 10002

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	CL-10021	AF88D	UP5315	DY-5030-150	EL-35	Filter-Blue
B	50	150						" Red
8	.05	400	CP14503	484-05	GT4S5	ST-4-05	TC-15	Line Filter
9	.15	400	CP14154	484-.15	GT4P2	ST-4-2	72P3	Line Isolation
10	.02	400	CP14203	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
11	.003	600	CP14302	684-003	GT6D3	ST-6-003	TC-23	Tone Compensation
12	.1	200	CP12104	484-.1	GT2P1	ST-2-1	TC-1	AVC Filter
13A	5000	300	CP12502	484-005	GT6D5	ST-6-005	TC-25	Audio Coupling-Cer-Note1
B	220	300	CM15221	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
C	2000	300	CP12202	484-002	GT6D2	ST-6-002	TC-22	Audio Coupling
D	220	300	CM15221	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter-Note 2
14	500	300		1468-0005	5W5T5	MO.5-35	1FM-35	RF Coupling-Cer.

Note 1-Items 13A, B, C, D are combined into one unit.
Note 2-In some models Item #14 may be 100 MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	1 Meg.	½	VC-11105	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 15A per instructions
C	Switch		" "	41	SW-A	" " " " "
16A	1 Meg.	½	VC-13105	D13-137	M-63-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 16A per instructions

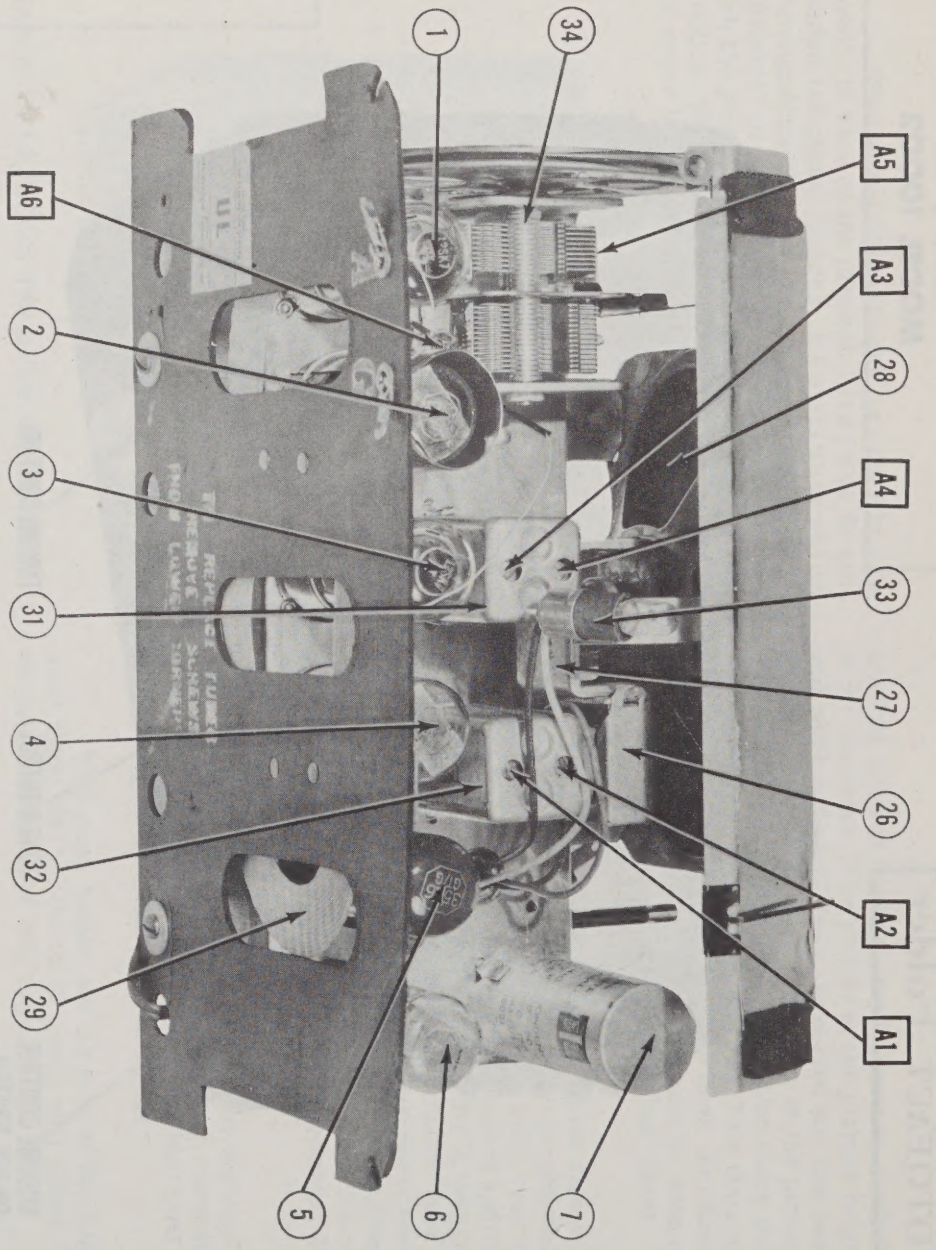
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
17	4700Ω	1		BTA-4700	Y1.-V1.-Red RF Plate Load
18	22KΩ	½	RC-12202	BTS-22K	Red-Red-Or. Osc. Grid
19	100KΩ	½	RC-11003	BTS-100K	Br.-Blk.-Y1. Conv. Grid
20	2.2 Meg.	½	RC-12204	BTS-2.2 Meg	Red-Red-Grn. AVC Network
21	10 Meg.	½	RC-11005	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
22	220KΩ	½	RC-12203	BTS-220K	Red-Red-Y1. AF Plate Load
23	470KΩ	½		BTS-470K	Y1.-V1.-Y1. Output Grid
24	150Ω	½	RC-31500	BW-½-150	Br.-Grn.-Br. Output Cathode
25	1000Ω	2	RC-51001	BT-2-1000	Br.-Blk.-Red Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
26	1900Ω	3Ω	166Ω	.4Ω		A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.				
27	PM	3Ω			46A07	
	CONE DIA.	VC DIA.				
28	4"x6"	9/16"				

R F COILS

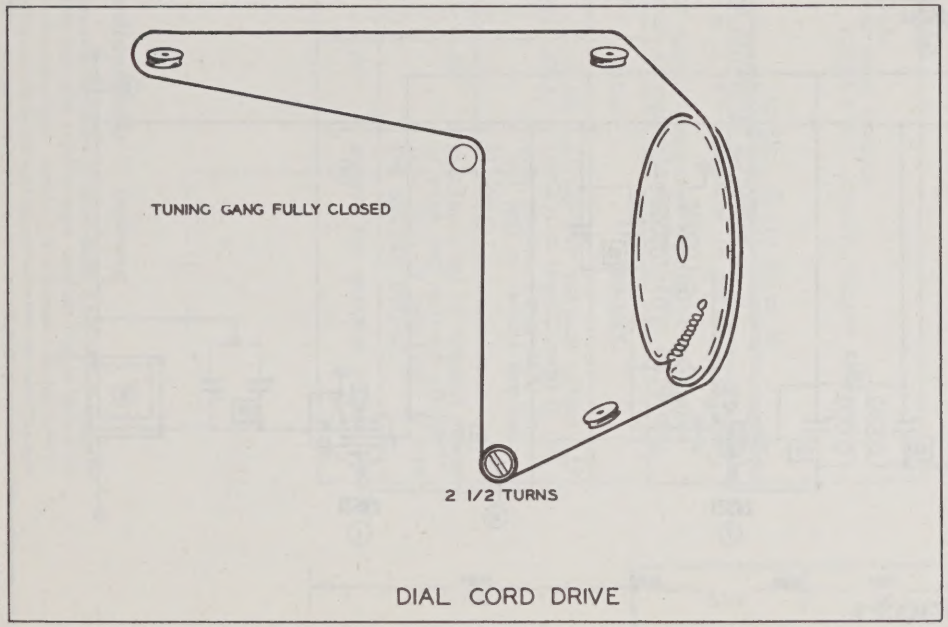
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	MEISSNER PART No.	
29	Loop Ant.	.2Ω	3.3Ω	AL-10021		
30	Osc. Coil	.6Ω	3.8Ω	TRC-10013	14-1060*	*Add 50 MMFD from high side tuning cap. to osc. grid.
31	Input IF	20Ω	20Ω		16-6666	
32	Output IF	31Ω	31Ω		16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	Brown			Type #47

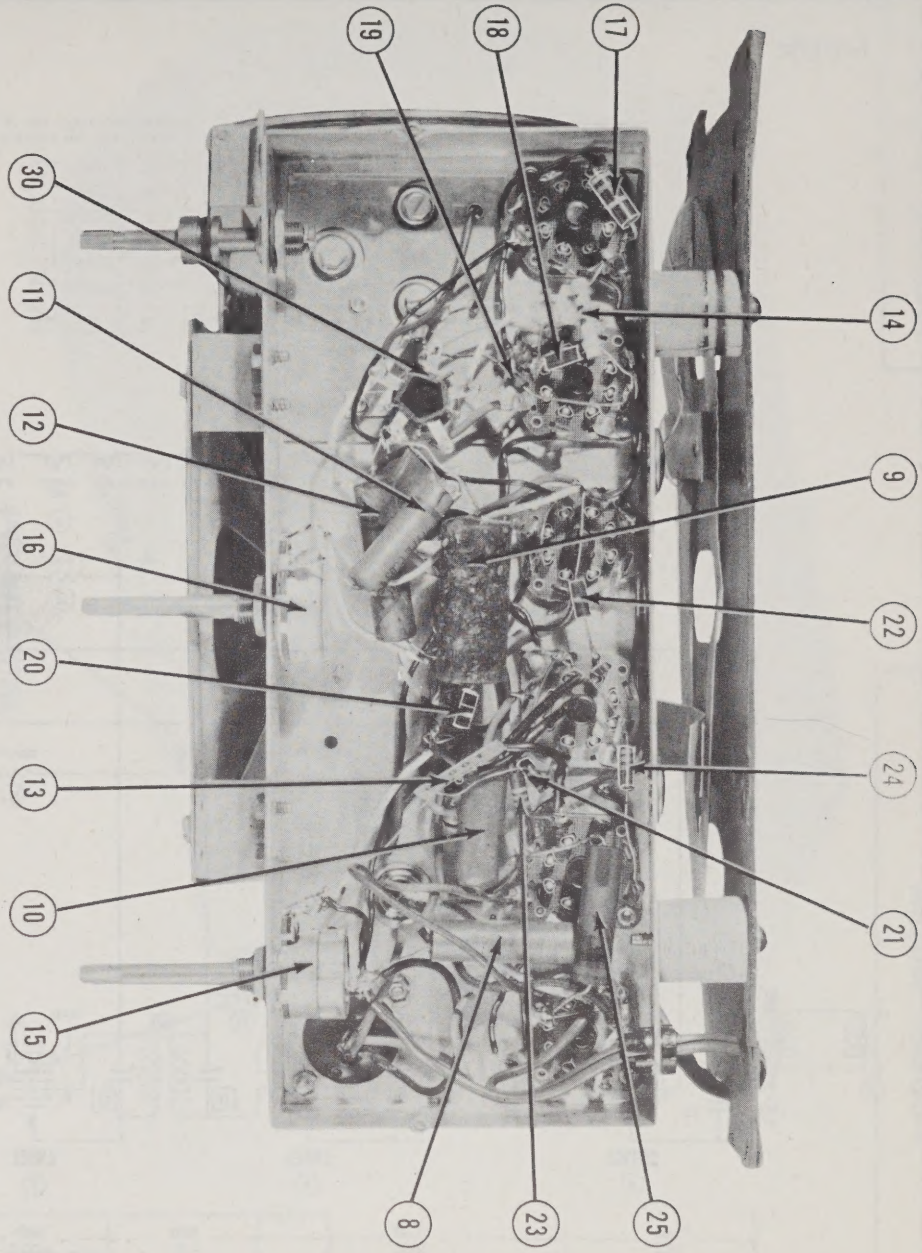
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
34	2 Gang Var. Cap	CV-10009	(49-489MMF, 42-212MMF)

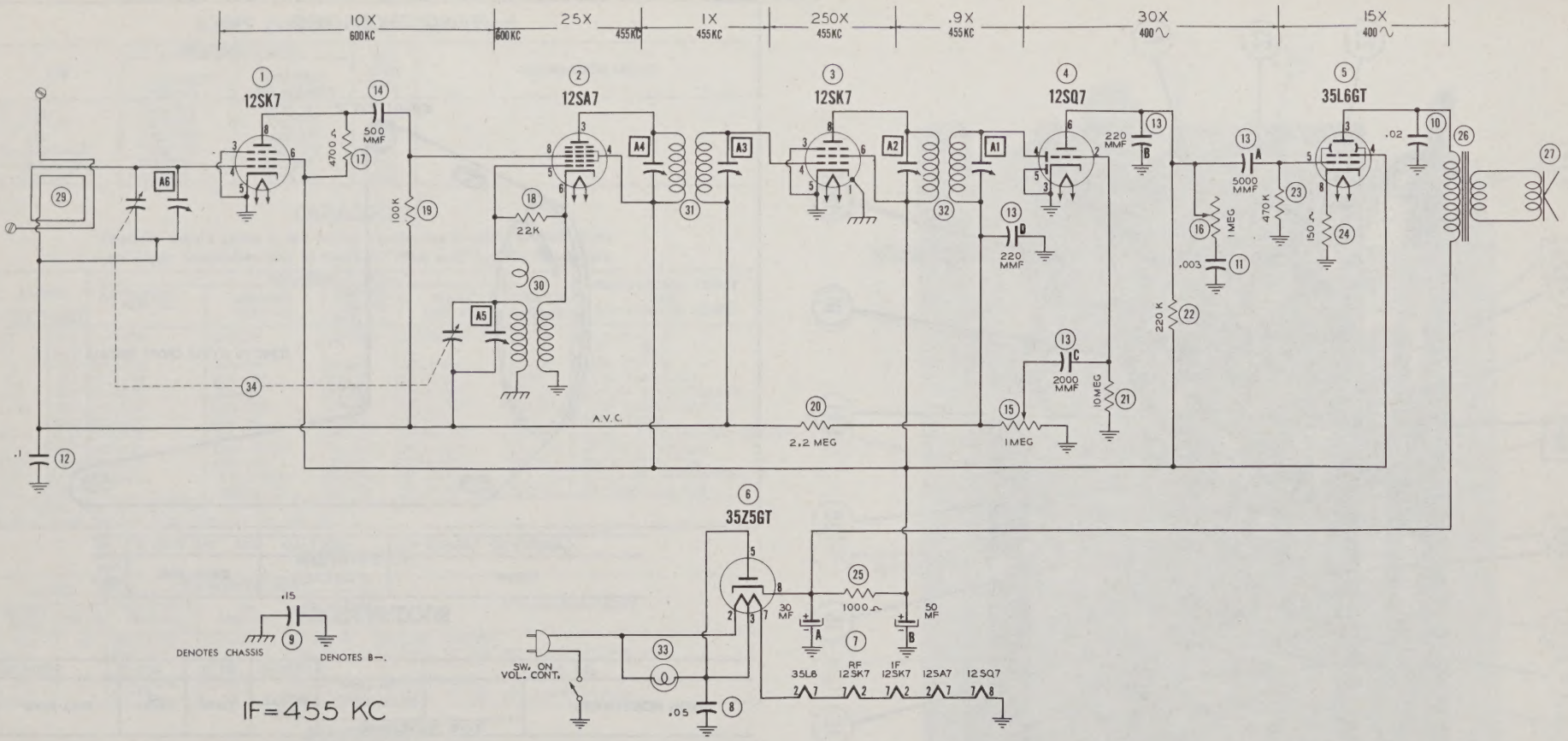


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 10002



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	39VAC	0V.	-.2VDC	0V.	83VDC	50VAC	50VDC
2	12SA7GT	0V.	26VAC	83VDC	83VDC	-7.6VDC$	0V.	13VAC	-.2VDC
3	12SK7GT	0V.	26VAC	0V.	-.2VDC	0V.	83VDC	39VAC	83VDC
4	12SQ7GT	0V.	-.6VDC	0V.	-.7VDC	0V.	50VDC	13VAC	0V.
5	35L6GT	0V.	85VAC	118VDC	83VDC	0V.	0V.	50VAC	5.7VDC
6	35Z5GT	0V.	117VAC	112VAC	0V.	112VAC	0V.	85VAC	123VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	INF.	38Ω	0Ω	3.2 Meg.	0Ω	300KΩ	52Ω	300KΩ
2	12SA7GT	INF.	25Ω	300KΩ	300KΩ	22KΩ	.6Ω	12Ω	3.3 Meg.
3	12SK7GT	INF.	25Ω	0Ω	3.2 Meg.	0Ω	300KΩ	38Ω	300KΩ
4	12SQ7GT	INF.	10 Meg.	0Ω	1 Meg.	0Ω	520KΩ	12Ω	0Ω
5	35L6GT	INF.	85Ω	300KΩ	300KΩ	470KΩ	INF.	52Ω	150Ω
6	35Z5GT	INF.	110Ω	108Ω	INF.	108Ω	INF.	85Ω	300KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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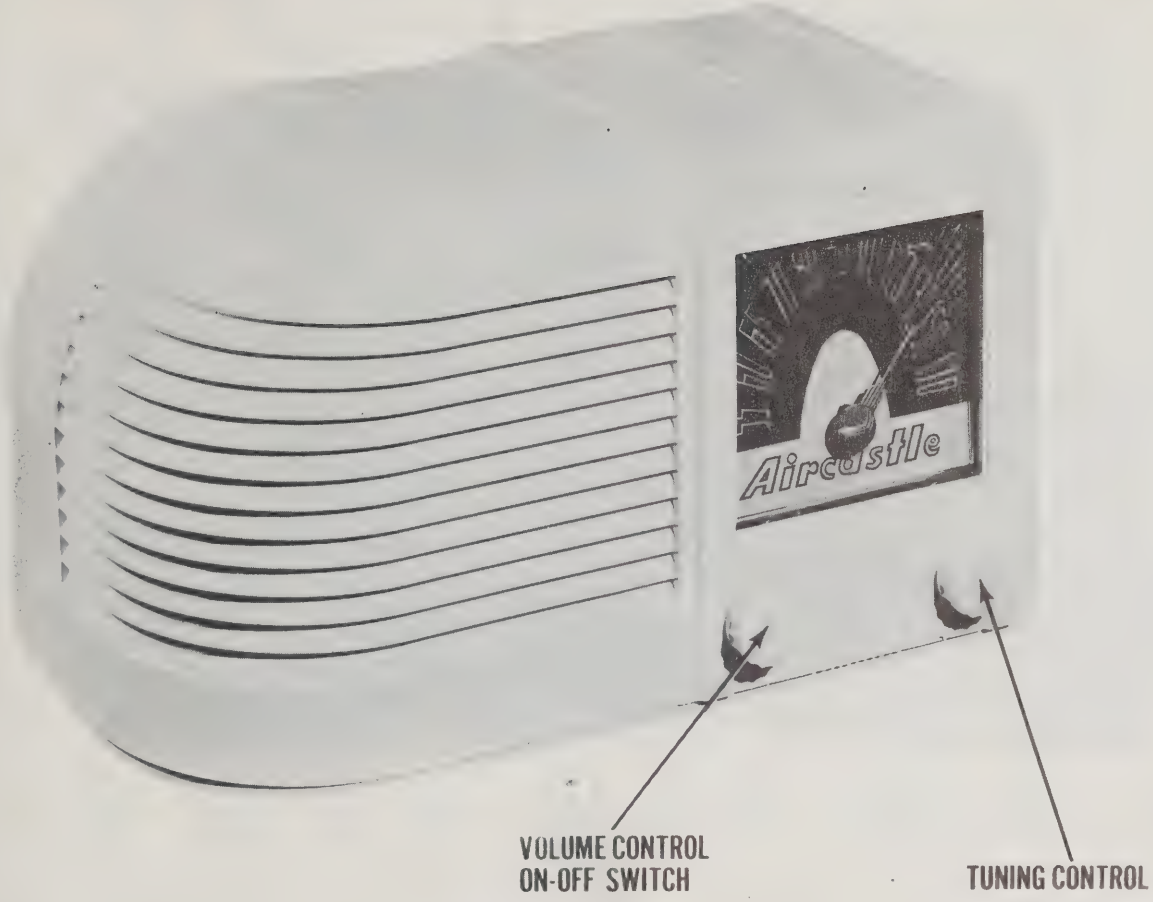
494-1

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRCASTLE
MODEL 10003-I



AIRCASTLE
MODEL 10003-I

AIRCASTLE MODEL 10003-I

TRADE NAME	Aircastle, Model 10003-I
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 2/49-#494-2 SET #56 FOLDER #2

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 10003-I

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150		PRSA150/50-50	EZ5515	DSB-2x50-150	TA-505	Filter-Red
B	50	150						" -Blue
7	.05	400		484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.15	400		484-.15	GT4P1	ST-4-1	72P2	Line Isolation
9	.02	400		484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.005	600		684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
11	.005	600		684-005	GT6D5	ST-6-005	TC-25	" "
12	.05	400		484-05	GT4S5	ST-4-05	TC-15	AVC Filter
13	200	300		1468-0002	5W5T2	MO.5-32	1FM-32	Diode RF Filter-Cer.
14	200	300		1468-0002	5W5T2	MO.5-32	1FM-32	" " " "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	1 Meg.	½	VCP-12110	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 15A per instructions
C	Switch		" "	41	SW-A	" " " " "

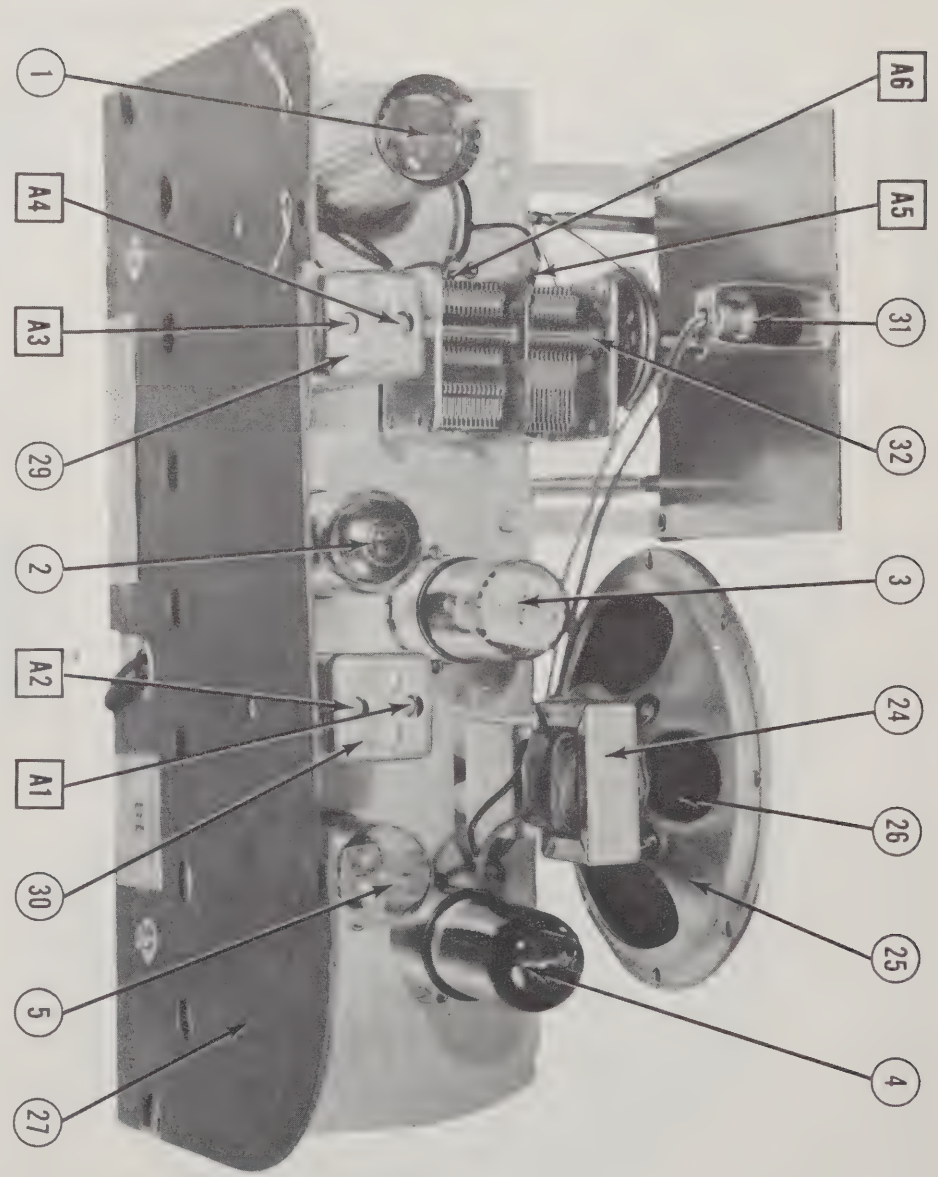
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
16	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
17	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
18	75KΩ	½		BTS-68K	Vi.-Grn.-Or. Diode Filter
19	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
23	910Ω	1		BTS-1000	White-Br.-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
24	2000Ω	3.4Ω	164Ω	.5Ω		A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-105†		†Drill and tap magnet frame.
25	PM	3.4Ω		Mod. P5-X	5A15†	
	CONE DIA.	VC DIA.				
26	4-3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	MEISSNER PART No.	
27	Loop Ant.	.2Ω	3Ω			
28	Osc. Coil	.5Ω	4Ω		14-1060*	*Add 50 MMFD cap. from high side of tuning cap. to osc. grid.
29	Input IF	20Ω	20Ω	TSP-10020	16-6666	
30	Output IF	31Ω	31Ω	TSP-10021	16-6667	

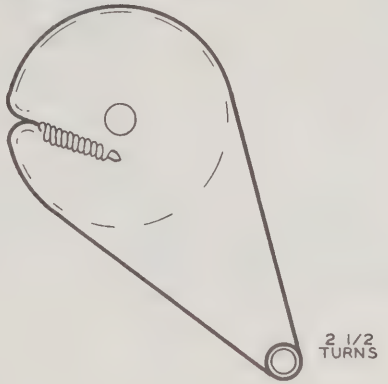
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.		INSTALLATION NOTES
31	Bayonet	6-8	0.15	Brown			Type #47

MISCELLANEOUS

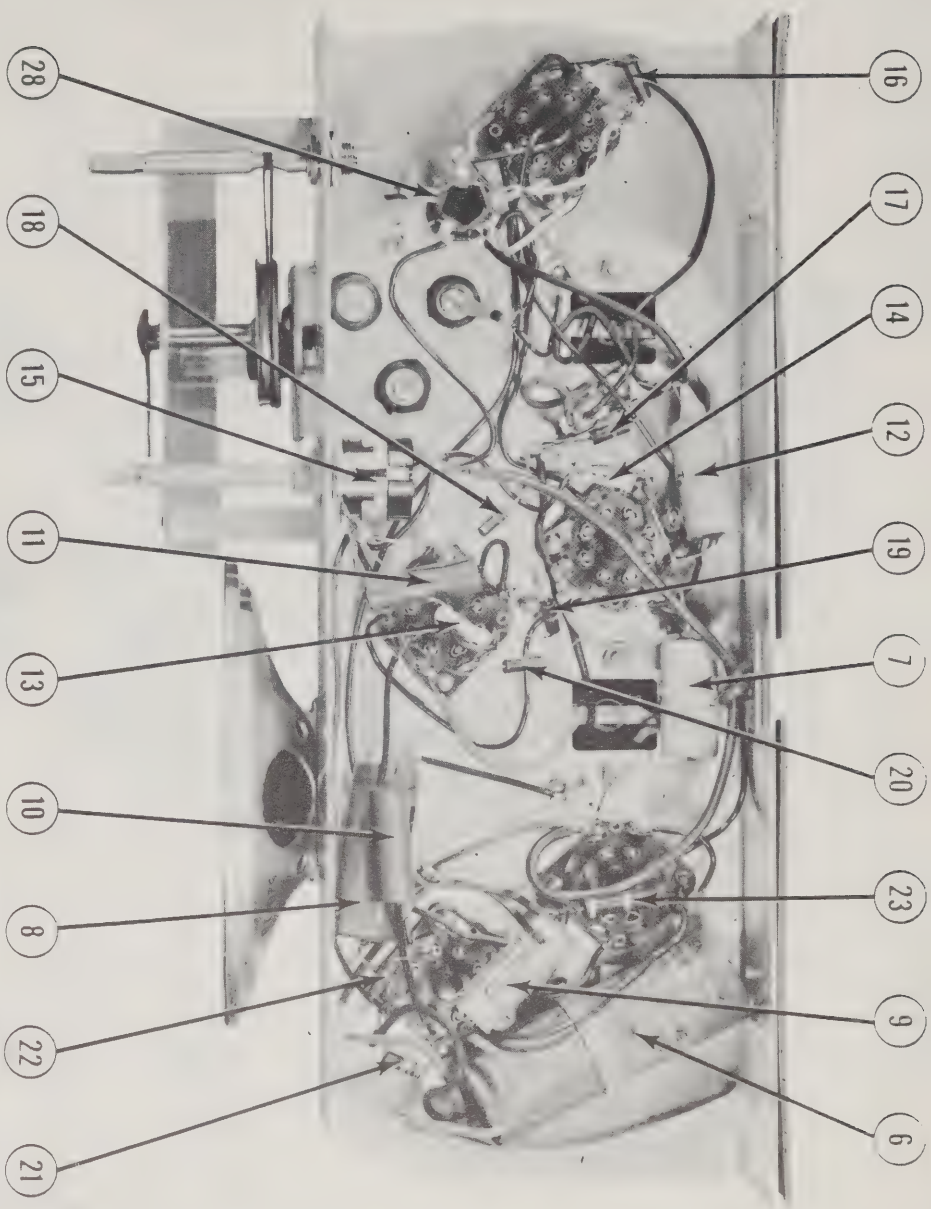
ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
32	2 Gang Var. Cap		(31-442MMF, 30-197MMF)

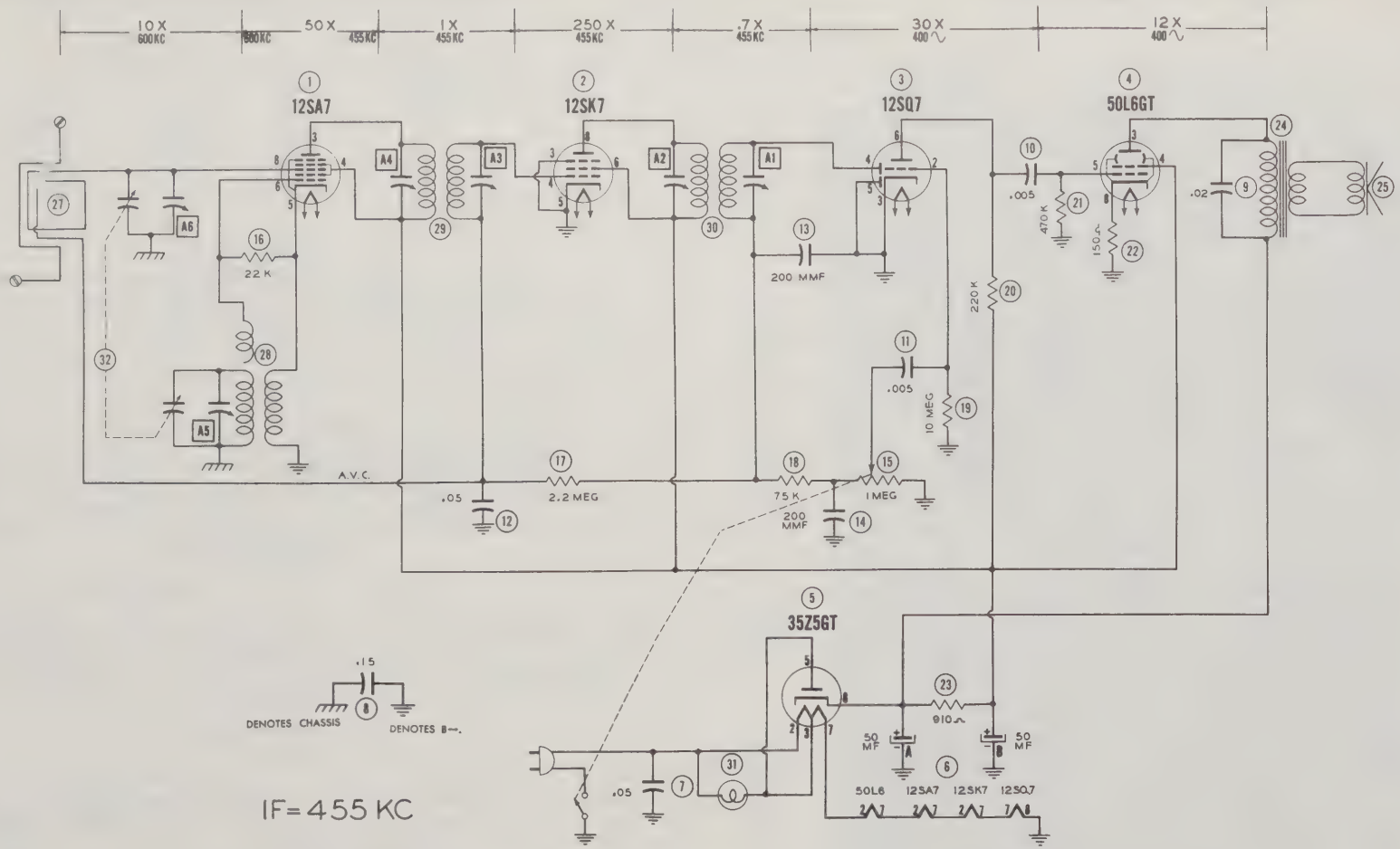
TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	39VAC	100VDC	100VDC	-.7VDC§	0V.	26VAC	-.7VDC
2	12SK7GT	0V.	26VAC	0V.	-.7VDC	0V.	100VDC	12VAC	100VDC
3	12SQ7GT	0V.	-.8VDC	0V.	0V.	-.8VDC	65VDC	12VAC	0V.
4	50L6GT	0V.	90VAC	120VDC	100VDC	0V.	0V.	39VAC	6.7VDC
5	35Z5GT	0V.	117VAC	112VAC	100VDC	112VAC	0V.	90VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	INF.	38Ω	150KΩ	150KΩ	22KΩ	.5Ω	25Ω	3.3 Meg.
2	12SK7GT	INF.	25Ω	0Ω	3.3 Meg.	0Ω	150KΩ	12Ω	150KΩ
3	12SQ7GT	INF.	10 Meg.	0Ω	0Ω	1.1 Meg.	370KΩ	12Ω	0Ω
4	50L6GT	INF.	90Ω	150KΩ	150KΩ	470KΩ	0Ω	38Ω	150Ω
5	35Z5GT	INF.	110Ω	108Ω	150KΩ	108Ω	INF.	90Ω	150KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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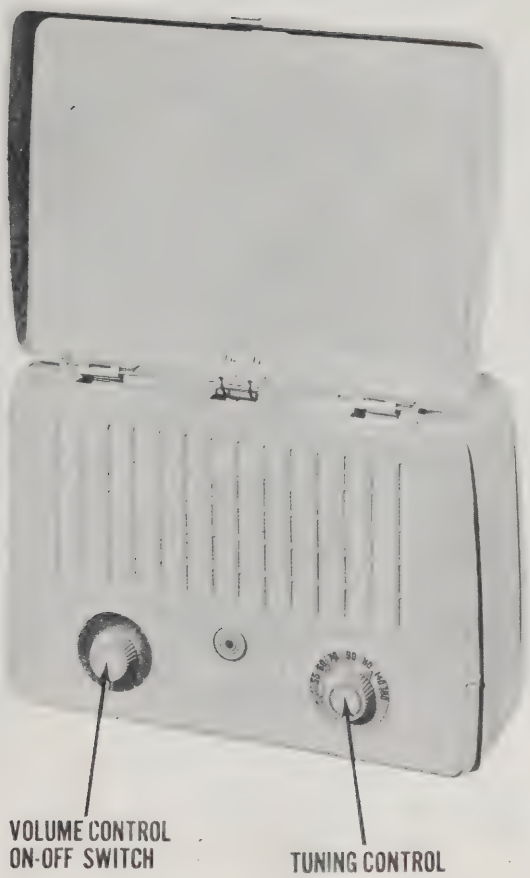
494-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



AIRCASTLE
MODEL 147114

AIRCASTLE
MODEL 147114

AIRCASTLE MODEL 147114

TRADE NAME	Aircastle, Model 147114
SUPPLIER	Spiegel Inc., 1061 W. 35th Street, Chicago, Ill.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 Det.-AVC-AF, 3V4 Power Output.
POWER SUPPLY RATING	105-125 Volts AC-DC or 7.5 Volts "A" Supply and 67.5 Volts "B" Supply. .11 Amp. @ 117 Volts AC or 65MA @ 7.5 Volts DC and 10MA @ 67.5 Volts DC.
TUNING RANGE—BROADCAST	540-1600KC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transormer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side too large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200 MMF to reduce hum modulation.
2.	.1MFD	"	1600KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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DATE 2/49-#494-3 SET #56 FOLDER #3

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 147114

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1U5	1U5	6BW	
4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	A18-250	PRSA-503010	UP6CJ64	DSB804020-150	TA-311	Filter-Red
B	30	150						Filter-Yellow
C	100	10						Filament Bypass Blue
6	.05	400	A16-172	484-05	GT4S5	ST-4-05	TC-15	Line Filter
7	.05	400	A16-189	484-05	GT4S5	ST-4-05	72P1	Line Isolation
8	.002	200	A16-182	484-002	GT6D2	ST-6-002	TC-22	Output Plate Bypass
9	.005	600	A16-153	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
10	.05	200	A16-152	484-05	GT2S5	ST-4-05	68P35	RF Bypass Power Supply
11	.005	600	A16-153	684-005	GT6D5	ST-6-005	TC-25	IF Grid Filter
12	.1	200	A16-157	484-1	GT2P1	ST-2-1	68P36	Filament Bypass
13	.05	200	A16-152	484-05	GT2S5	ST-4-05	68P35	AVC Filter
14A	5000	300	*	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
B	50	300		1468-00005	5W5Q5	MO.5-45	1FM-45	AF Plate Bypass
C	5000	300		684-005	GT6D5	ST-6-005	TC-25	AF Screen Bypass
15	100	300	A15-188	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
16	50	500	A15-175	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Capacitor.

* Item #14A,B,C and 25A,B,C are combined into one unit obtainable under manufacturers part no. A17-100.

CONTROLS

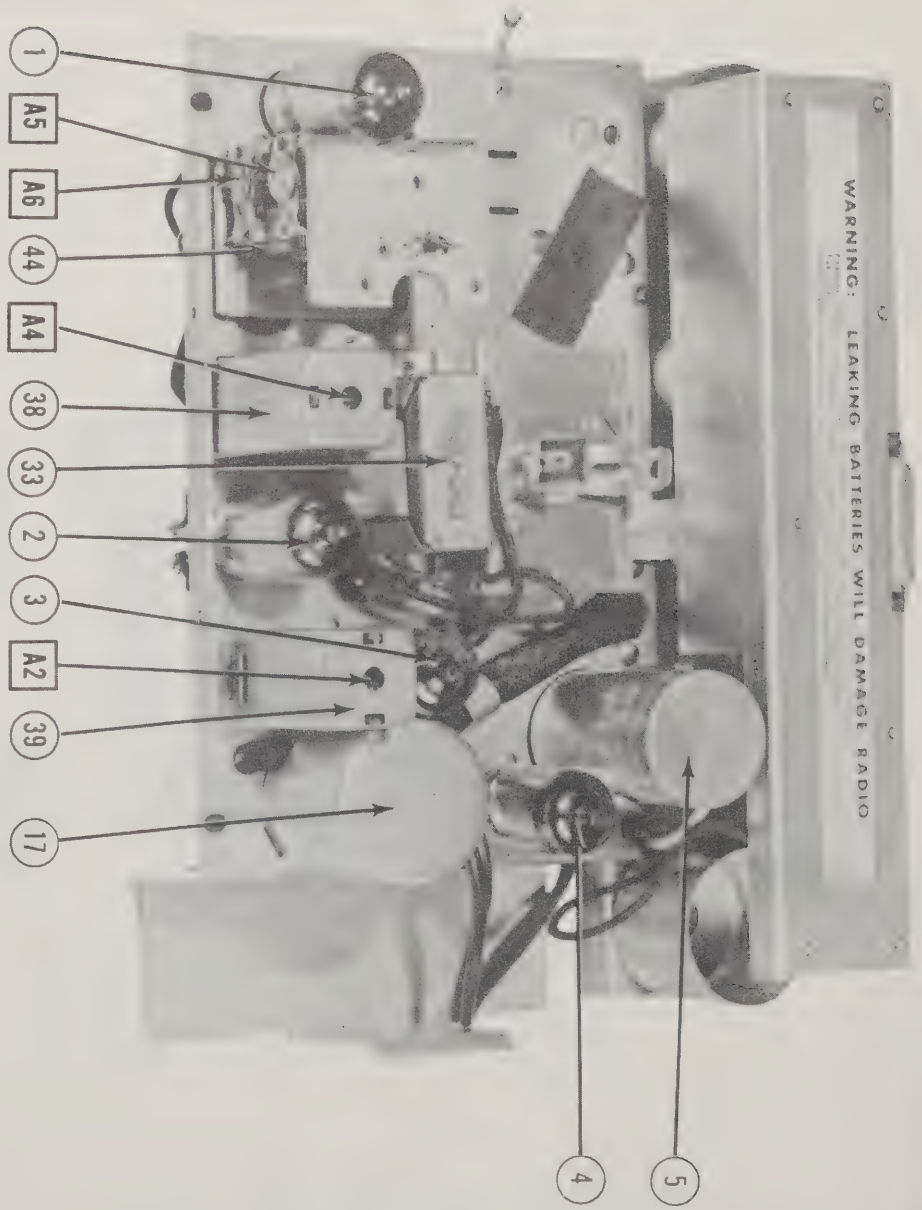
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	½	A24-178	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 17A per Instructions.
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
18	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. Osc. Grid
19	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
20	1500Ω	½	A60-680	BTS-1500	Br.-Grn.-Red Filament String
21	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	47KΩ	½	A60-685	BTS-47K	Yl.-Vi.-Or. Diode Filter
23	470Ω	½	A60-722	BTS-470	Yl.-Vi.-Br. Filament String
24	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
25A	1 Meg.	½	*	BTS-1 Meg.	AF Plate Load
B	4.7 Meg.	½		BTS-4.7 Meg.	AF Screen
C	2.2 Meg.	½		BTS-2.2 Meg.	Output Grid
26	1 Meg.	½	A60-668	BTS-1 Meg.	Br.-Blk.-Grn. " "
27	560Ω	½	A60-758	BTS-560	Grn.-Blue-Br. Bias
28	1200Ω	½	A60-756	BTS-1200	Br.-Red-Red Filament String
29	390Ω	½	A60-665	BW-½-390	Or.-White-Br. " "
30	2000Ω	5	A60-757	AB-2000	Filament Dropping
31	3300Ω	1	A60-724	BTA-3300	Or.-Or.-Red Filter
32	160Ω	3	A60-725		Br.-Blue-Br. Surge Limiter

* Items 25A,B,C, and 14A,B,C are combined into one unit obtainable under part no. A17-100.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
33	7600Ω	3.3Ω	425Ω	.5Ω	B80-245	A-3329†		A-2998	† Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
34	PM	3.3Ω	B79-364			
	CONE DIA.	VC DIA.				
35	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
36	Loop Ant.		1.8Ω	S84-271		
37	Osc. Coil	3.8Ω	10Ω	A10-514		
38	Input IF	22Ω	21.8Ω	C10-475	16-6668	
39	Output IF	22Ω	22Ω	C10-475	16-6669	

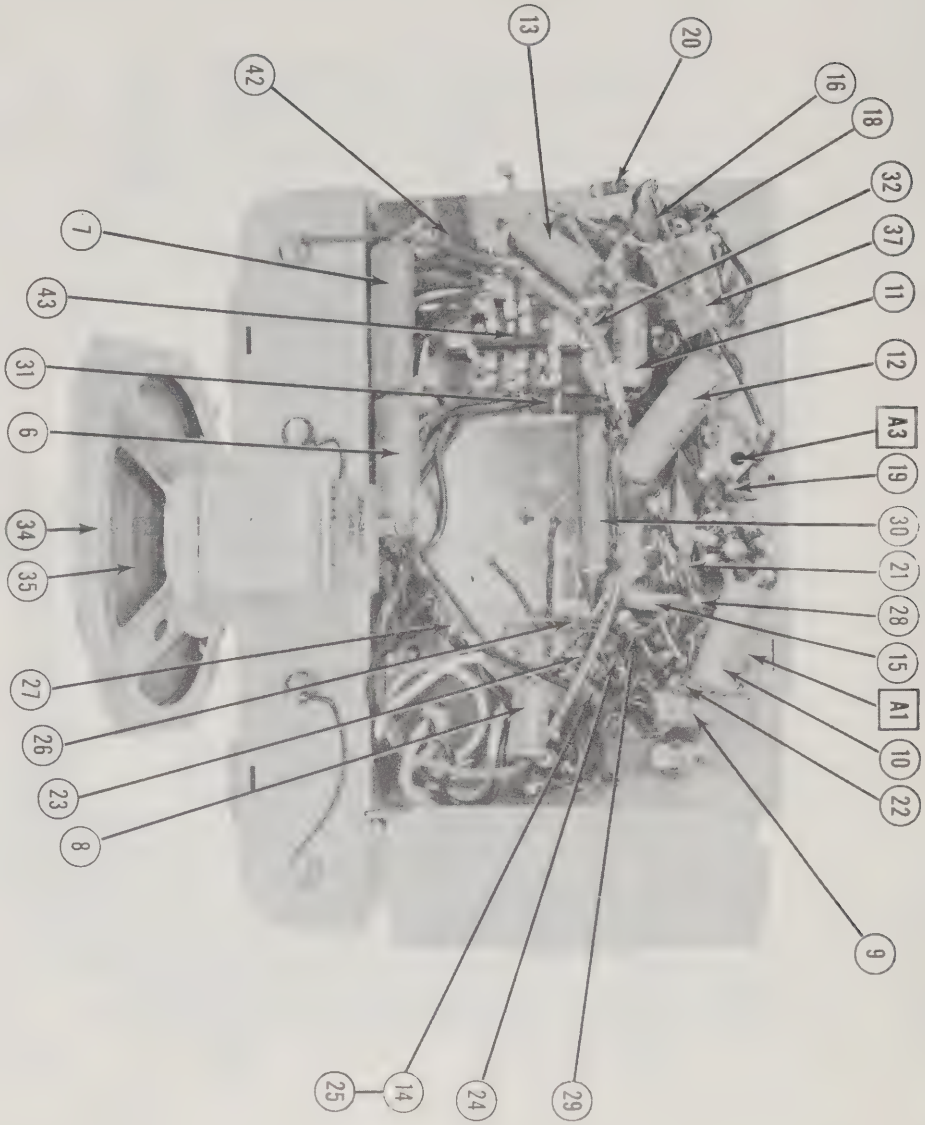
BATTERIES

ITEM No.	VOLTAGE	AIRCASTLE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
40	7.5V "A"	1514	950			2R			5 Used in Series
41	67.5V "B"	1523		467			XX45		

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
42	Rectifier	A83-568	Selenium
43	Switch	A69-182	AC-DC / Battery
44	2 Gang Var. Cap.	B19-197	(13-282MMF, 18-150MMF)
	Knob	C52-216	Tuning
	"	B52-217	Volume

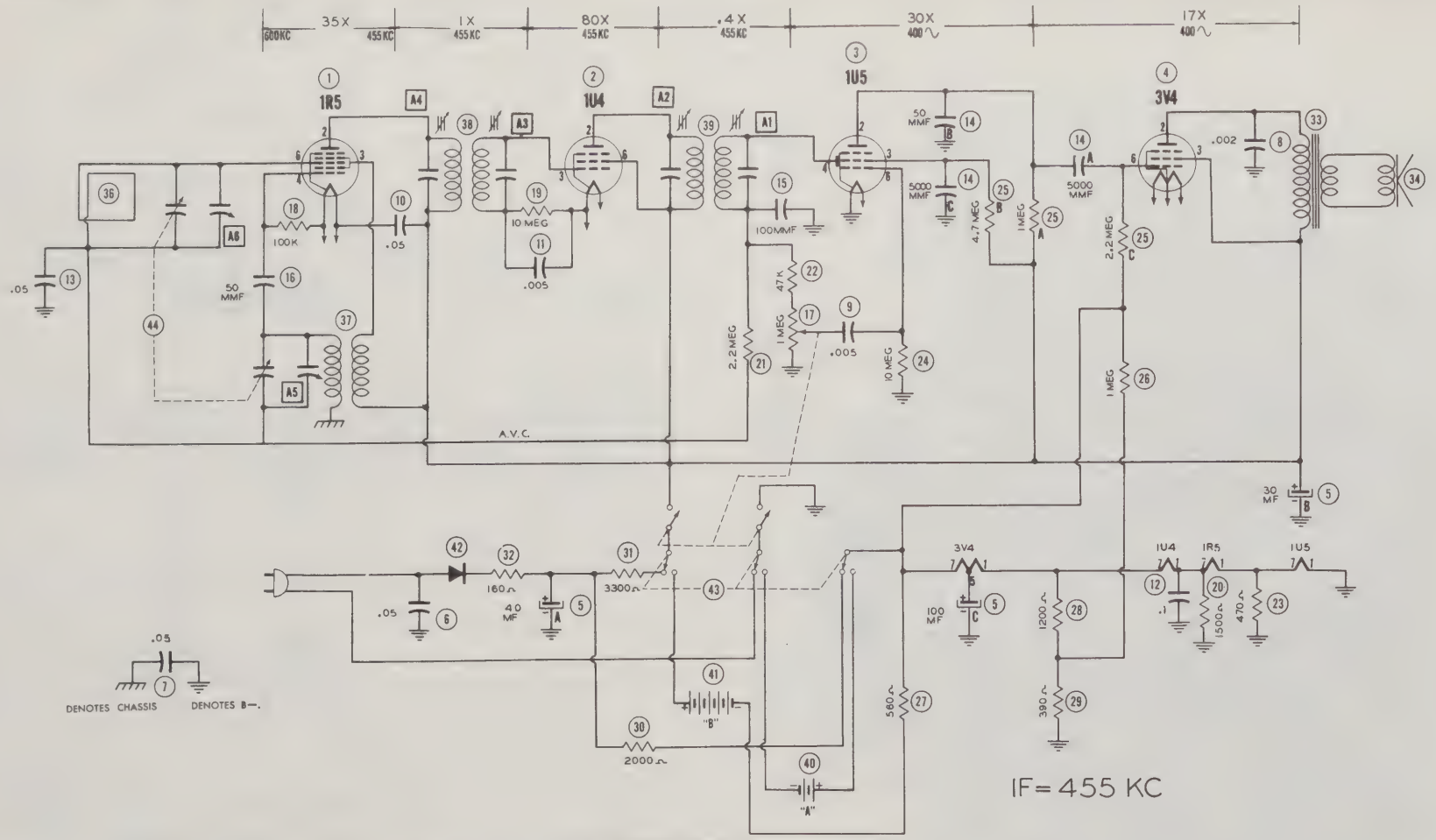
CHASSIS—BOTTOM VIEW



DATE 2/49-#494-3 SET #56 FOLDER #3

AIRCASTLE MODEL 147114

AIRCASTLE MODEL 147114



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.3V.DC	63V.DC	63V.DC	14V.DC§	1.3V.DC	0V.	2.6V.DC
2	1U4	2.6V.DC	63V.DC	63V.DC	0V.	2.6V.DC	0V.	4V.DC
3	1U5	0V.	7V.DC	2.7V.DC	3V.DC	1V.DC	0V.	1.3V.DC
4	3V4	4V.DC	60V.DC	63V.DC	0V.	5.3V.DC	0V.	6.5V.DC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	70KΩ	70KΩ	100KΩ	*	3.3Meg.	*
2	1U4	*	70KΩ	70KΩ	4 Meg.	*	10 Meg.	*
3	1U5	*	1.1 Meg.	4.7 Meg.	1 Meg.	300Ω	10 Meg.	*
4	3V4	*	70KΩ	70KΩ	INF.	*	3.2 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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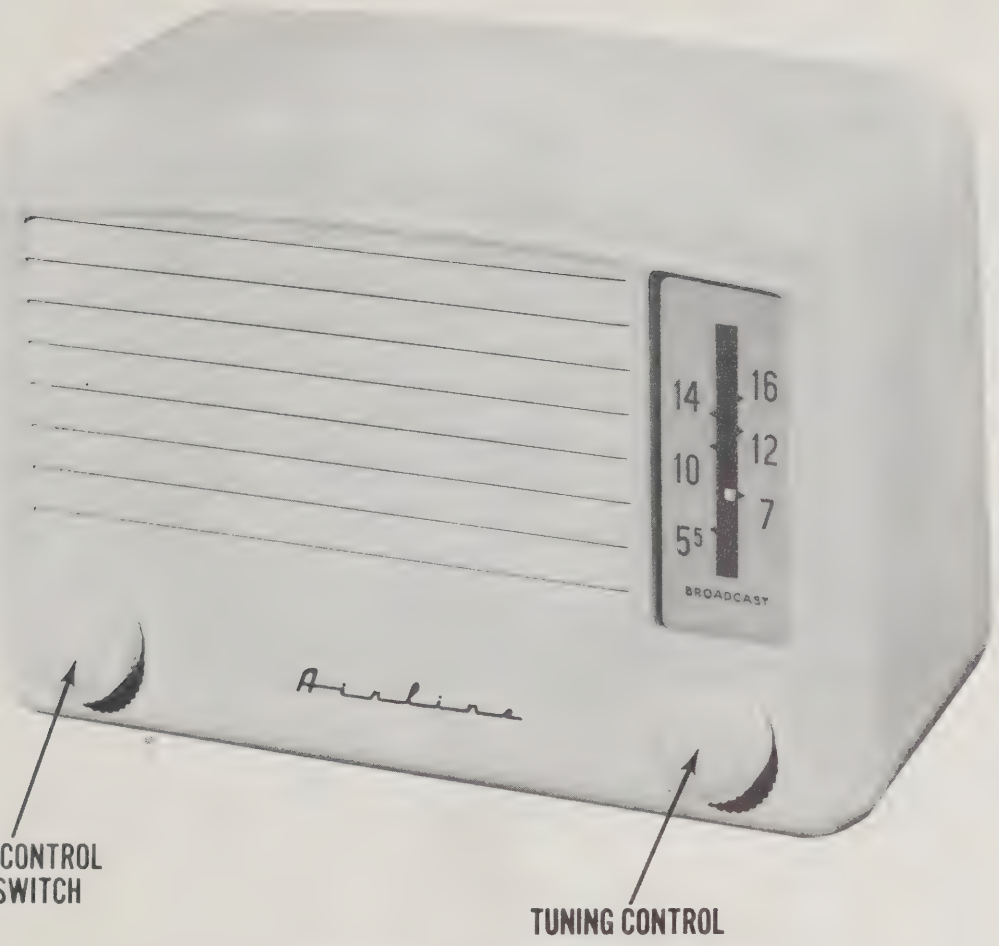
494-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to B-.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODEL
84KR-1520A



AIRLINE MODEL
84KR-1520A

AIRLINE MODEL 84KR-1520A

TRADE NAME	Airline, Model 84KR-1520A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC-DC Operated TRF Receiver
TUBES (FOUR)	Types, 12SG7 RF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC
RATING	.25 Amp., @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		High side of sig. gen. near ant. lead. No direct connection.	1620KC	Tuning slugs fully out.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output.
2.		"	1400KC	1400KC	"	A5, A6, A7, A8.	" " " "

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PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 84KR-1520A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SG7	12SG7	6BK	
2	Det.-AVC-AF	12SQ7	12SQ7	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	26156-B	PRS-A40302	EDL4215C	DSB-303	TA-305	Filter Red
B	20	150						Filter Yellow
C	20	25						Cathode Bypass Green
6	.05	200	8661	484-05	GT2S5	ST-4-05	TC-15	Line Filter
7	.1	200	26157	484-.1	GT2P1	ST-2-1	72P2	Line Isolation
8	.01	400	8583	484-01	GT2S1	ST-4-01	TC-11	Output Plate Bypass
9	.005	600	17646	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
10	.005	600	17646	684-005	GT6D5	ST-6-005	TC-25	" "
11	.05	200	8661	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
12	.05	200	8661	484-05	GT2S5	ST-4-05	TC-15	RF Bypass Power Supply
13	100	300	26190	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass Cer.
14	30	300	26412	1468-000025	5W5Q25	MO.5-43	MS-425	Ant Coupling Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15	2.2 Meg.	½	26177-A			Volume Control

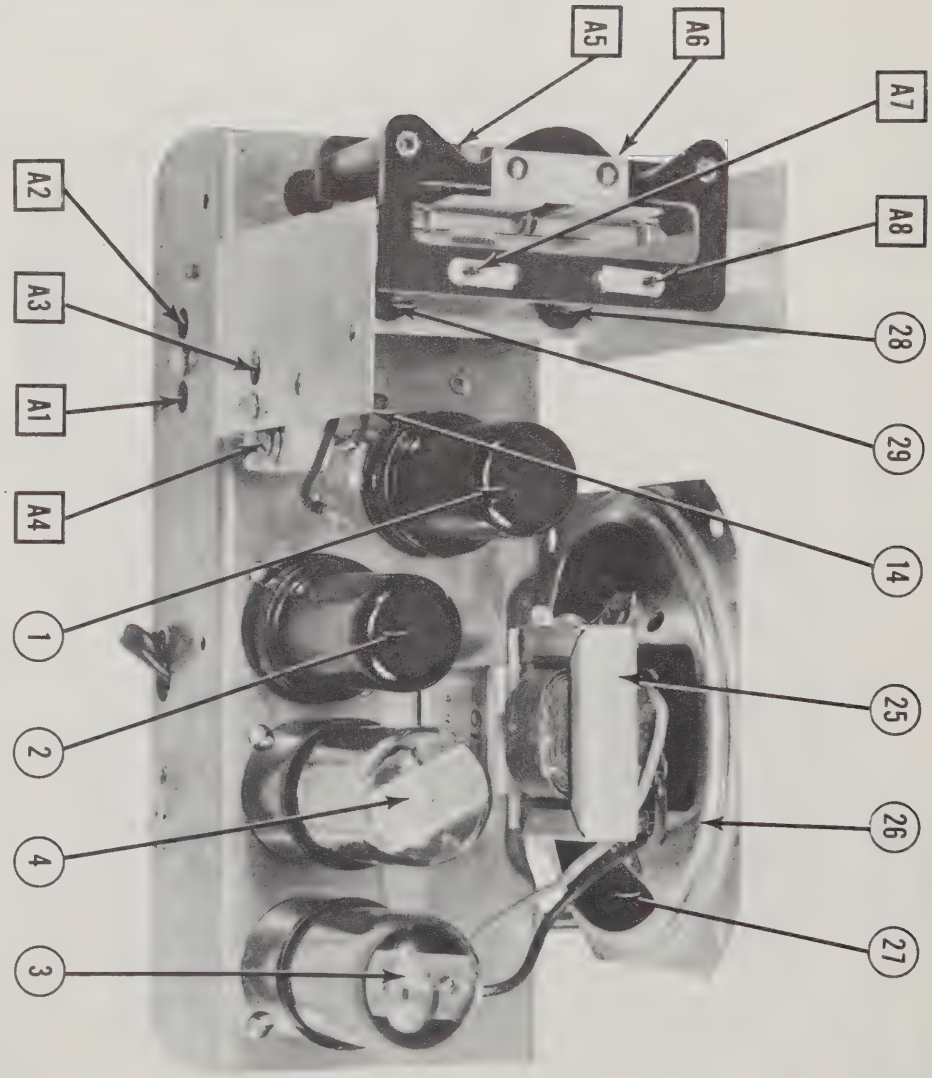
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
16	2.2 Meg.	½	25134	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
17	15 Meg.	½	14365	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
18	470KΩ	½	25042	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
19	470KΩ	½	25042	BTS-470K	Yl.-Vi.-Yl. Output Grid
20	150Ω	1	26110	BW-1-150	Br.-Grn.-Br. Output Cathode
21	1500Ω	½	26169	BTS-1500	Brn.-Grn.-Red Filter
22	22Ω	½	25006		Red-Red-Blk. Surge Limiter
23	56Ω	1	26168-A	BW-1-56	Grn.-Blue-Blk. Line Dropping
24	220KΩ	½	25041	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
25	1400Ω	3.3Ω	140Ω	.5Ω	26172	A-3865*	T22S45*	A-2928*	* Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-113#†		# Drill and tap magnet frame.
26	PM	3.3Ω	26171	Mod.P4-X	4A07†	† Trim flange.
	CONE DIA.	VC DIA.				
27	4"	9/16"				

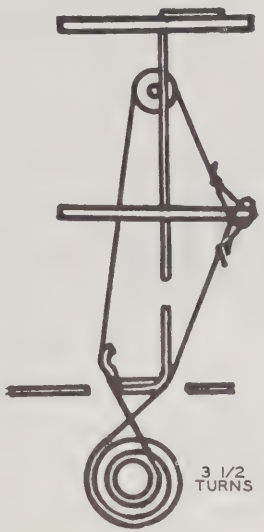
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.
28	Ant. Coil PRI	12Ω		26238	
29	Ant. Coil SEC		12Ω	26238	
30	RF Coil PRI	12Ω		26247	
31	RF Coil SEC		12Ω	26238	

MISCELLANEOUS

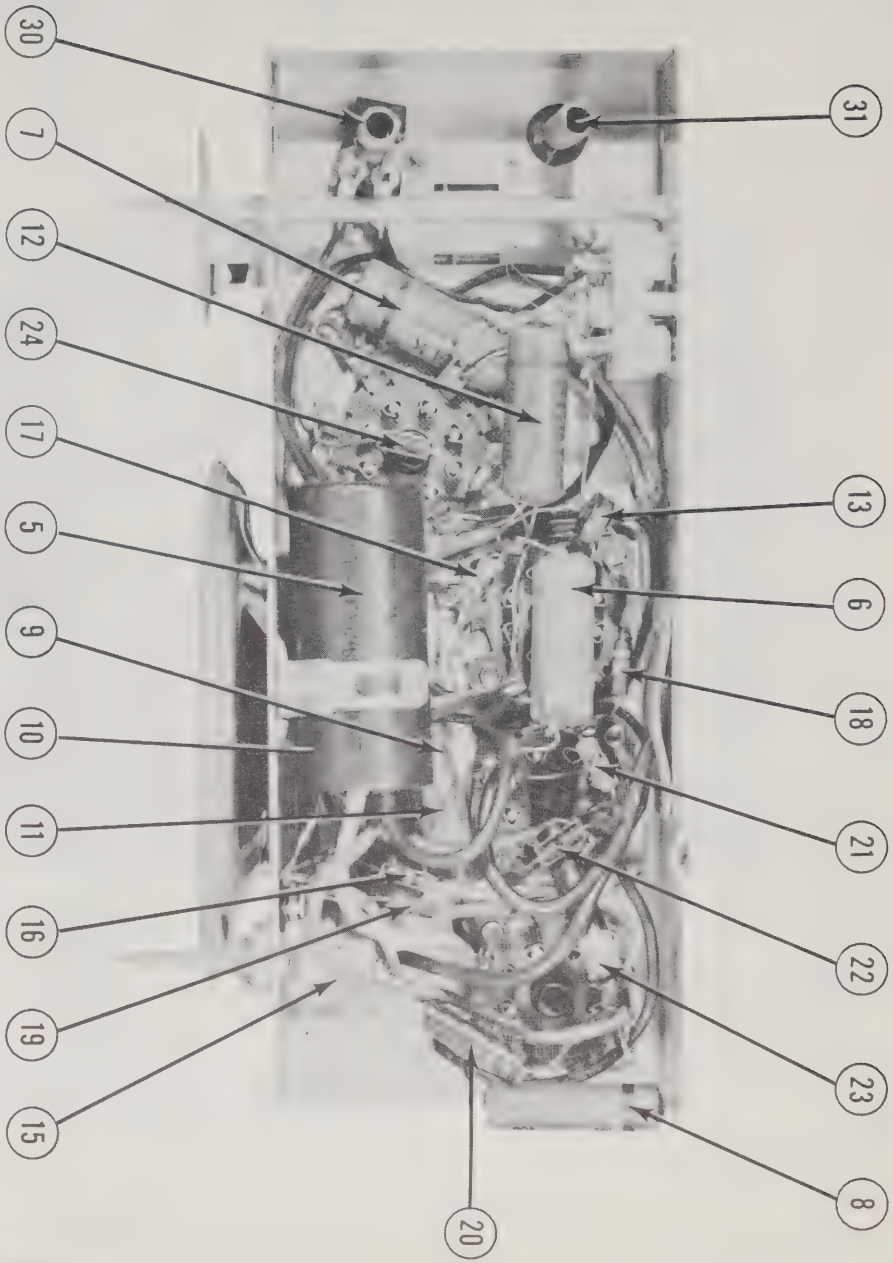
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
	Trimmer	26140-C	A1, A2
	"	26141-B	A3, A4
	Dial Scale	26159-A	Ivory, Red
	" "	26418	Gold, White
	Knob	26161-B	Ivory
	"	26408	Red
	"	26409	Green
	"	26410	Yellow
	"	26411	Blue

TUNING GANG FULLY OPEN

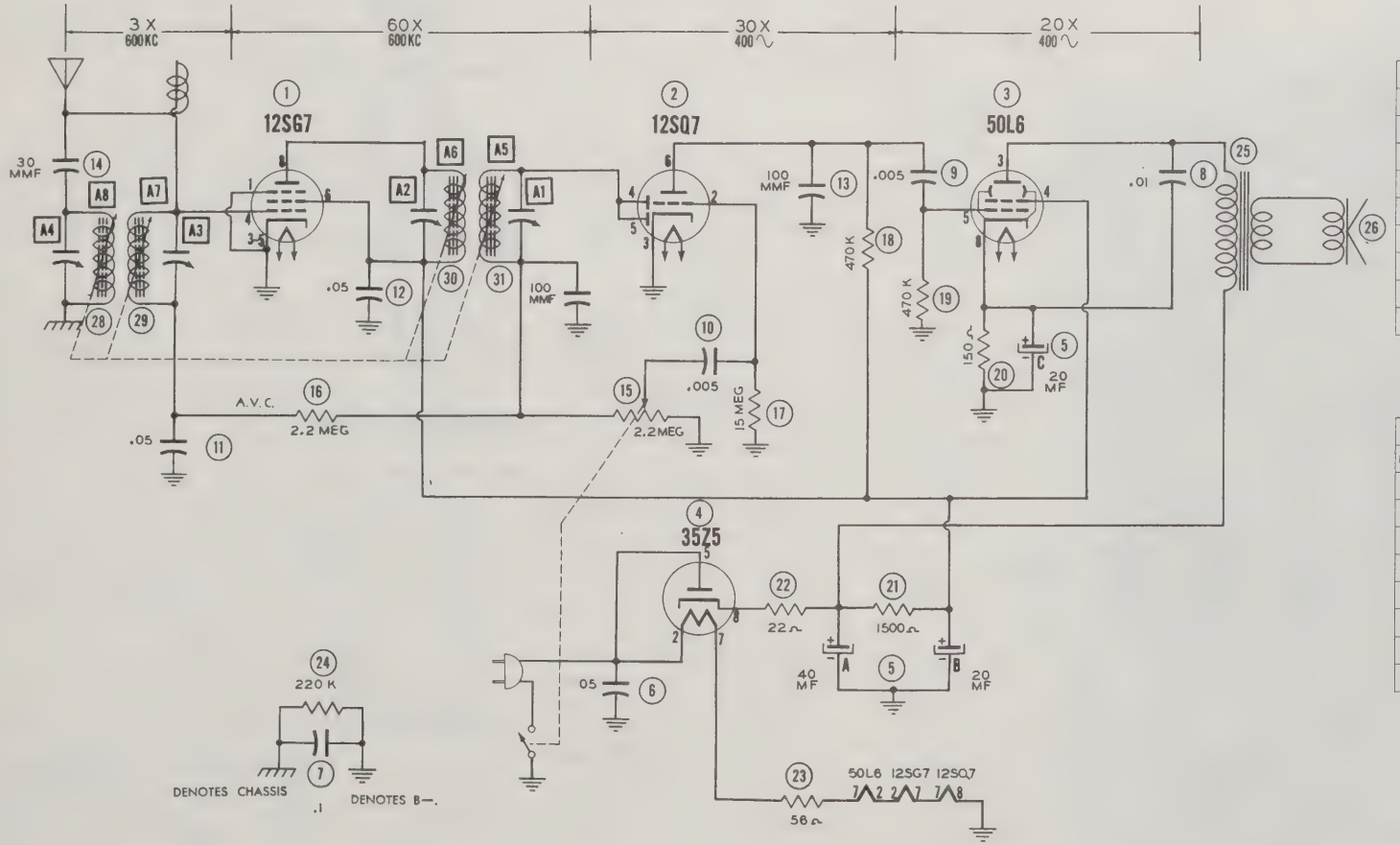


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 84KR-1520A



Pin No.	12SG7 Volt.	12SG7 Res.	12SQ7 Volt.	12SQ7 Res.
1	0V.	220KΩ	0V.	220KΩ
2	26VAC	2SΩ	-.5VDC	15 Meg.
3	0V.	0Ω	0V.	0Ω
4	.7VDC	4.2 Meg.	-.6VDC	2 Meg.
5	0V.	0Ω	-.6VDC	2 Meg.
6	105VDC	120KΩ	70VDC	470KΩ
7	12VAC	12Ω	12VAC	12Ω
8	105VDC	120KΩ	0V.	0Ω

Pin No.	50L6GT Volt.	50L6GT Res.	35Z5GT Volt.	35Z5GT Res.
1	0V.	INF.	0V.	INF.
2	26VAC	25Ω	117VAC	160Ω
3	125VDC	120KΩ	111VAC	150Ω
4	105VDC	120KΩ	105VDC	110KΩ
5	0V.	470KΩ	117VAC	160Ω
6	-.7VDC	4.6 Meg.	130VDC	110KΩ
7	75VAC	75Ω	85VAC	130Ω
8	72VDC	150Ω	133VDC	120KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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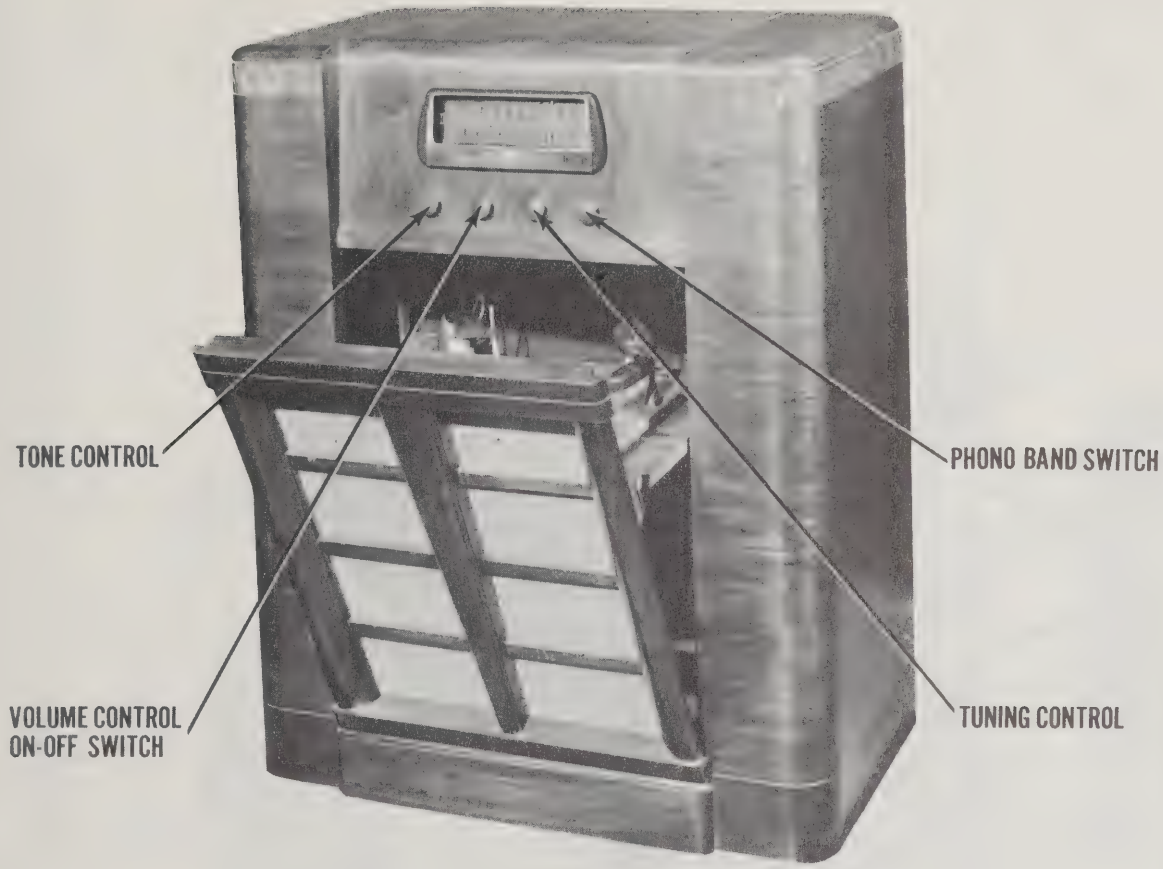
494-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODELS
84WG-2714F, G, H, J



AIRLINE MODELS
84WG-2714F, G, H, J

AIRLINE MODEL 84WG-2714F

TRADE NAME	Airline, Models 84WG-2714F, G, H, & J
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(SEVEN)	Types 6BA7 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 FM Detector, 6AV6 AM Det.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC
RATING	.50 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

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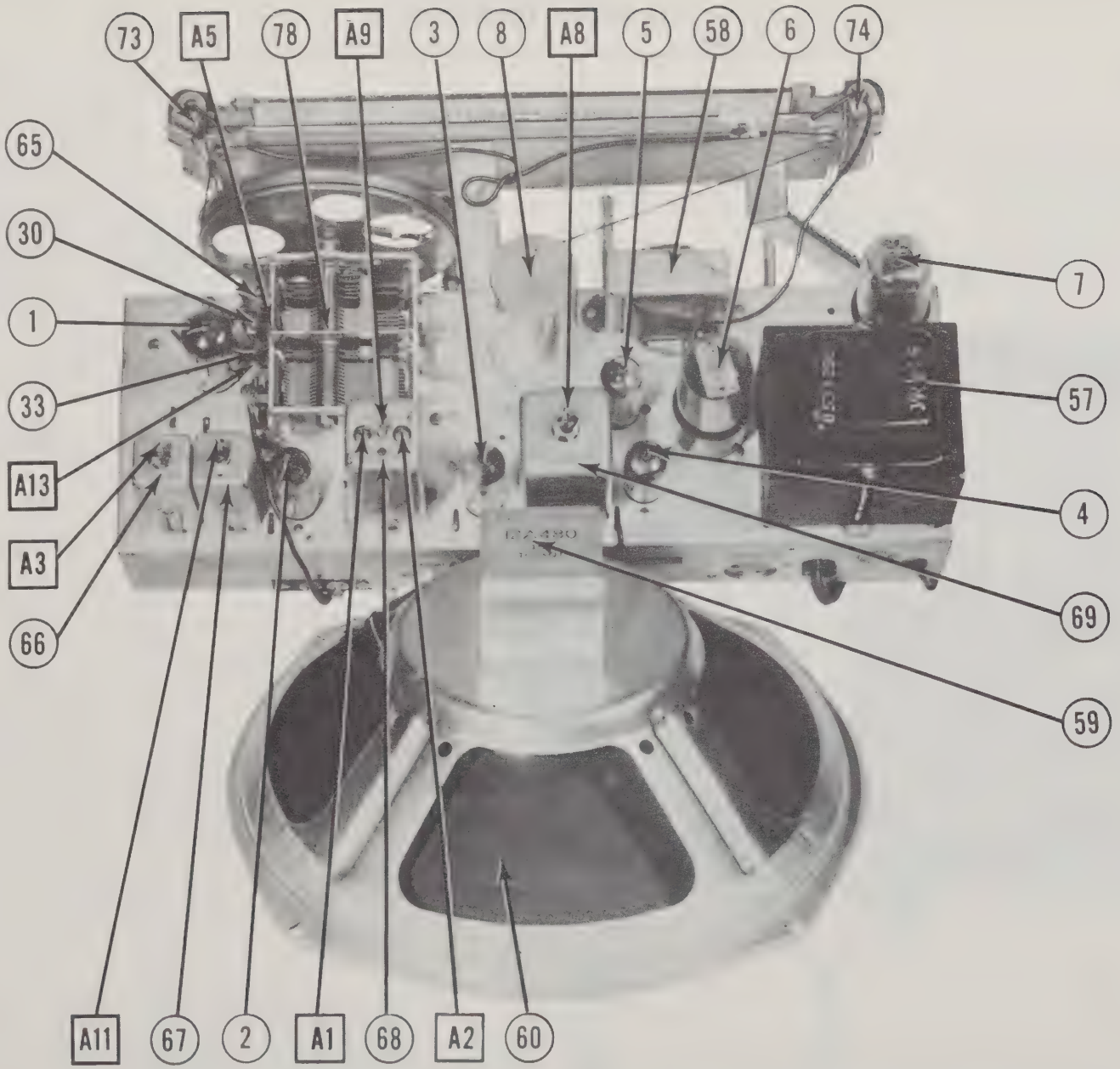
73
A5
78
A9
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A8
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A13
A3
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57
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A4
A10
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A7
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A
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6BA7	6BA7		
2	1st IF	6BA6	6BA6	7BK	
3	FM 2nd IF	6BA6	6BA6	7BK	
4	FM Detector	6AL5	6AL5	6BT	
5	AM Det.-AVC-AF	6AV6	6AV6	7BT	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	350	45X359	AF88J4A	UP4445C	DY-406	EL-432	◓ Filter
B	40	350		PRS350/24	BR2045	M-20-350		■ "
C	20	350						▲ "
D	20	25						Cathode Bypass
9	5	100	45X361	PRS150/4	BR415	M-4-450	UT-41	Stabilizing Cap.
10	.02	400	D66203	484-02	GT4S2	ST-4-02	TC-12	Audio Coupling
11	.005	600	D66502	484-005	GT6D5	ST-6-005	TC-25	" "
12	.004	200	B66402	484-004	GT6D4	ST-6-004	TC-24	Tone Compensation
13	.04	200	B66403	484-04	GT6S4	ST-4-02	TC-14	" "
14	.001	800	H66102	1084-001	GT16D1	STM-16-001	TR-21	Output Plate Bypass
15	.05	200	B66503	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
16	.05	200	B66503	484-05	GT2S5	ST-4-05	TC-15	" "
17	220	500	47X468	1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass
18	68	500	47X471	1468-000075	5W5Q7	MOS.5-47	1FM-475	Tone Compensation
19	100	500	47X526	1468-0001	5W5T1	MO.5-31	1FM-31	Det. Diode Load Cap.
20	2700	500	47X492	1467-0025	1W5D25	MW.5-225	1FM-23	De-emphasis
21	5000	500	47X507	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Decoup. -Cer.
22	100	300	47X497	1468-0001	5W5T1	MO.5-31	1FM-31	IF Cpupling "
23	5000	500	47X507	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Decoup. "
24A	50	300	47X112	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Diode Filter
B	50	300	47X112	1468-00005	5W5Q5	MO.5-45	1FM-45	" " "
25	5000	500	47X507	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Cath. Byp. "
26	5000	500	47X507	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Plate Decoup. "
27	5000	300	47X507	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Screen Byp. "
28	10	500	47X512	1467-00001	5W5Q1	MO.5-41	1FM-41	Conv. Plate Byp. "
29	47	300	47X517	1467-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap. "
30	3	500	47X547					Fixed Trimmer "
31	12	500	47X522					" " "
32	12	500	47X522	1469-00001	5R5Q1	MO.5-41	1FM-41	Osc. Feedback "
33	5	500	47X521	1469-000005	5R5V5	MOS.5-55	MS-55	Fixed Trimmer "
34	500	300	47X508	1468-0005	5W5T5	MO.5-35	1FM-35	Filament Bypass " See Note 1
77	5000	300	47X507	1467-005	1D5D5	MW.5-25	1FM-25	IF Cath. Bypass " See Note 2

Note 1-This capacitor 5000 MMF on Model 84WG-2714J, replacements same as Item #21.
Note 2-Used on Models 84WG-2714H, J only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
35A	500KΩ	½	36X372	D13-133X	AT-78	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 35A per instructions
C	Switch		" "	41	SW-A	" " " " "
36A	3 Meg.	½	40X285	D13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 36A per instructions

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
61	AM Loop Ant.	0Ω	.8Ω	9A1972		
62	FM Dipole Ant.			9A2004		
63	FM Ant.Coil		0Ω	9A1956		
64	AM Osc.Coil		5.5Ω	9A1997		
65	FM " "		0Ω	9A2021		
66	AM 1st IF	7.5Ω	8.2Ω	9A1998		
67	FM 1st IF	.6Ω	.1Ω	9A1932		
68A	AM 2nd IF	14Ω	12Ω	9A1999		
B	FM 2nd IF		1.2Ω	9A1999		
69	Ratio Det.	2.6Ω	.1Ω	9A1970		
70	Parasitic Choke		0Ω	9A1940*		*One turn around 10Ω resistor.
71	Fil. Choke		0Ω	9A1882		Not used on Model 84WG-2714J.
72A	Osc. Cath. Choke		0Ω	9A1882		Model 84WG-2714F
B	"			35A1		Models 84WG-2714G, H. J

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
73	Bayonet	6-8	0.15	Brown	7A103		Type #47
74	"	"	"	"	"		" "

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
75	Switch	2A384	Band-Phono
76	2 Gang Var. Cap.	14A204	(40-540MMF, 45-225MMF)
A6	Trimmer	17A235	BC Ant. Adj.
A12	"	17A225	FM Osc. Adj.
	Dial Scale	58X715	Glass
	Dial Pointer	15X241	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
37	22KΩ	½	B84223	BTS-22K	Red-Red-Or. Osc. Grid
38	2700Ω	½	B83272	BTS-2700	Red-Vi.-Red Conv. Screen
39	470Ω	½	B84471	BTS-470	Yl.-Vi.-Br. Conv. Decoupling
40	100KΩ	½	B85104	BTS-100K	Br.-Blk.-Yl. AVC Network
41	68Ω	½	B83680	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
42	1200Ω	½	B84122	BTS-1200	Br.-Red-Red 1st IF Decoup.
43	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode Filter
44	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
45	68KΩ	½	B85683	BTS-68K	Blue-Gray-Or. 2nd IF Grid
46	1000Ω	½	B84102	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
47	27KΩ	½	B84273	BTS-27K	Red-Vi.-Or. De-emphasis
48	3.6Ω	½	43X233		Or.-Blue-Gold Series Filament
49	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Ratio Det. Diode Load-See Note 1
50	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. " " " " " "
51	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Tone Compensation
52	10 Meg.	½	B85106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
53	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
54	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
55	270Ω	1	B84271	BW-1-270	Red-Vi.-Br. Output Cathode
56A	1000Ω	4	43X224	AB-1000	Filter
B	1400Ω	6		AB-1500	"
78	150Ω	½	B83151		Br.-Grn.-Br. IF Cathode-See Note 2

Note 1-This resistor 10KΩ Part #B84103 on Models 84WG-2714G, H. J, IRC replacement BTS-10K.
Note 2-Used on Models 84WG-2714H, J only.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
57	117V AC @ .5A	520V CT .075A DC	5.2V AC @ 2.0A	6.7V AC @ 2.2A	53X290		T22R02#	

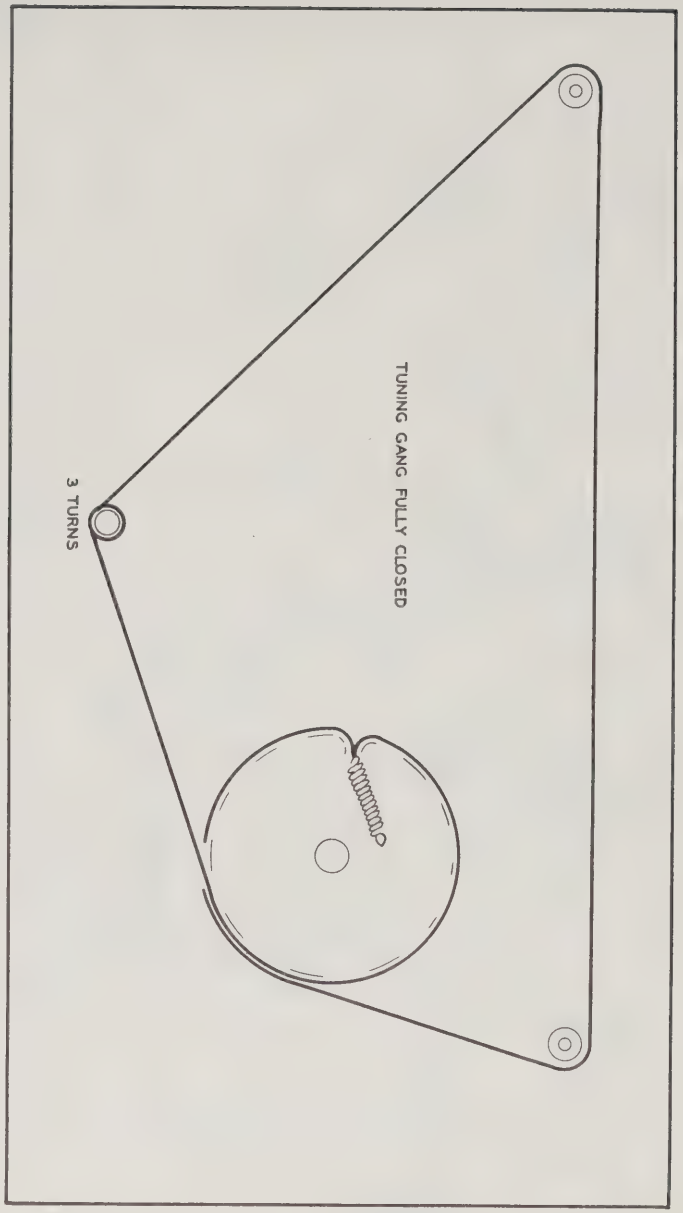
#Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
58	5500Ω	3.4Ω	475Ω	1.1Ω	51X134	A-3849	T22S87	A-2902	

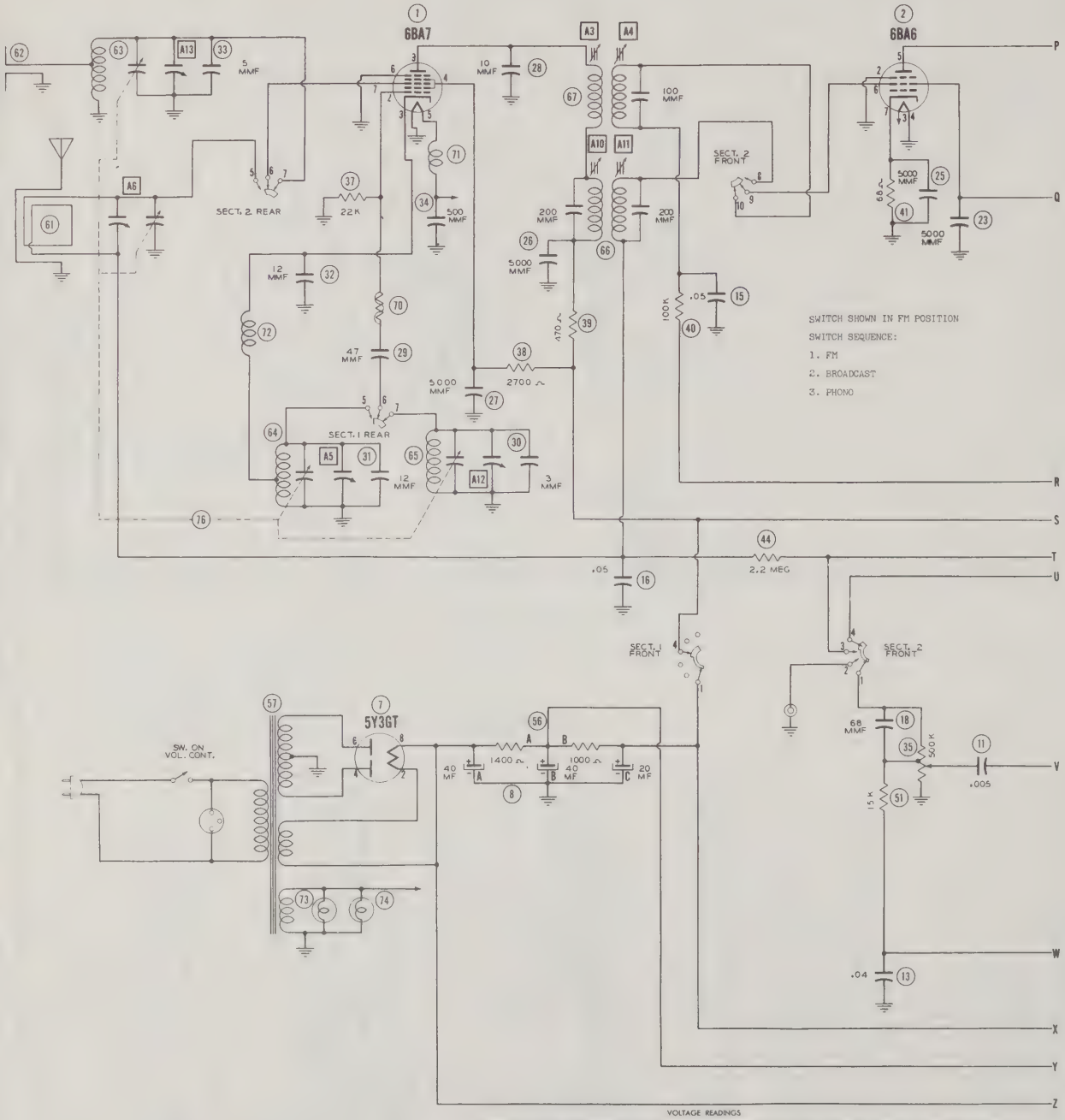
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
59	PM	3.4Ω	12A480	ST-119† Mod. P10-T	10A31	† Replace output transformer to match 6-8Ω voice coil.
	CONE DIA	VC DIA.				
60	9-1/2"	3/4"				



DIAL CORD DRIVE

DATE 2/49-494-5 SET #56-FOLDER #5



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
	1A 6BA7	1.5VDC	-4VDC	0V.	0V.	6.7VAC	0V.	-.5VDC	0V.	1.5VDC
‡	1B 6BA7	100VDC	-5.2VDC	0V.	0V.	6.7VAC	0V.	0V.	0V.	1.8VDC
	2 6BA6	-.5VDC	0V.	0V.	6.7VAC	117VDC	117VDC	1VDC	-	-
‡	3 6BA6	-.5VDC	0V.	0V.	6.7VAC	113VDC	113VDC	0V.	-	-
‡	4 6BA6	-.5VDC	.3VDC	0V.	6.7VAC	.4VDC	0V.	-.5VDC	-	-
	5 6BA6	-.6VDC	0V.	0V.	6.7VAC	0V.	-.4VDC	.7VDC	-	-
	6 6BA6	0V.	6.7VAC	1.4VDC	185VDC	0V.	0V.	0V.	8.9VDC	-
	7 5Y3GT	0V.	350VAC	0V.	260VAC	0V.	260VAC	0V.	250VDC	-

‡TAKEN WITH VACUUM TUBE VOLTMETER.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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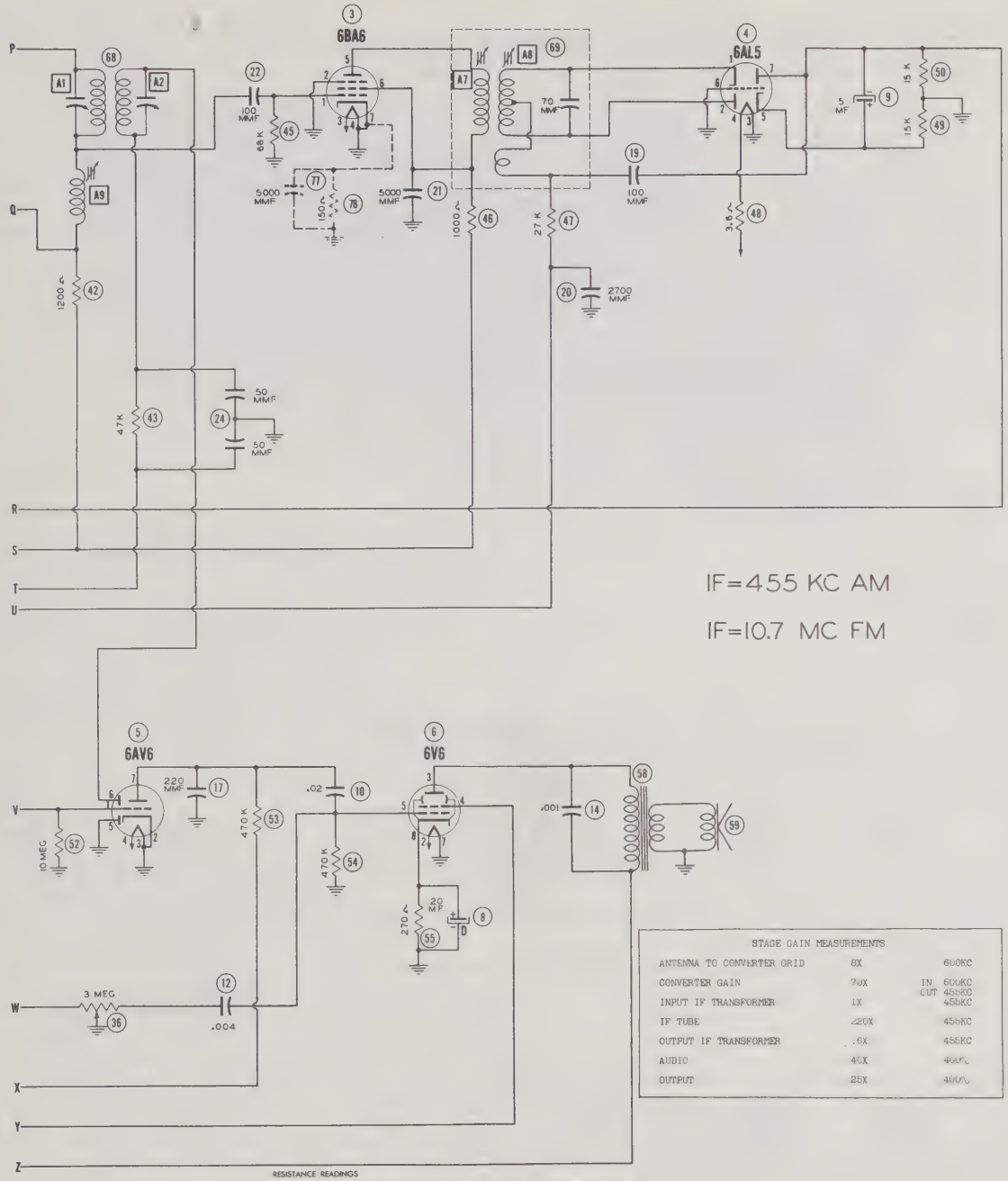

STAGE GAIN MEASUREMENTS		
ANTENNA TO CONVERTER GRID	8X	600KC
CONVERTER GAIN	70X	IN 600KC OUT 455KC
INPUT IF TRANSFORMER	1X	455KC
IF TUBE	220X	455KC
OUTPUT IF TRANSFORMER	.6X	455KC
AUDIO	40X	400~
OUTPUT	25X	400~

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1a	6BA7	95KΩ	22KΩ	1Ω	0Ω	.1Ω	0Ω	2.7 Meg.	0Ω	93KΩ
‡ 1b	6BA7	95KΩ	22KΩ	1Ω	0Ω	.1Ω	0Ω	0Ω	0Ω	93KΩ
2	6BA6	2.7 Meg.	0Ω	0Ω	.1Ω	94KΩ	94KΩ	68Ω	-	-
‡ 3	6BA6	68KΩ	0Ω	0Ω	.1Ω	93KΩ	93KΩ	0Ω	-	-
‡ 4	6AL5	530KΩ	530kΩ	0Ω	.1Ω	15KΩ	0Ω	15KΩ	-	-
5	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	550KΩ	560KΩ	-	-
6	6V6GT	INF.	.1Ω	90KΩ	92KΩ	470KΩ	.5Ω	0Ω	270Ω	-
7	5Y3GT	INF.	90KΩ	INF.	104Ω	INF.	111Ω	INF.	90KΩ	-

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

AM-IF Alignment must be completed before FM-IF Alignment is attempted.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) of 6BA6 1st IF Tube (2). Low side to chassis.	455KC	AM (Center position)	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output.
2	.1 MFD.	High side to Pin 7 (grid) of 6BA7. Low side to chassis.	"	"	"	"	A3,A4	" " " "
3	.1 MFD.	"	1620KC	"	"	"	A5	" " " "
4	50 MMFD	High side to external antenna lead. Low side side to chassis.	1400KC	"	Tune for maximum output.	"	A6	Adjust for maximum output. Set dial pointer to 1400KC mark on dial scale.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

When applying signal from signal generator to converter grid disconnect lead from Pin 7 of 6BA7 to terminal #6 of band switch and solder a 100KΩ resistor from Pin 7 of 6BA7 to chassis making leads as short as possible.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	2500 MMFD	High side to Pin 1 (grid) of 6BA6 2nd IF Tube (3). Low side to chassis.	10.7MC (Unmodulated)	FM (fully clockwise)	Tuning cap. fully open.	DC probe to Point Ⓐ. Common to chassis	A7	Adjust for maximum deflection.
6	"	"	"	"	"	DC probe to Point Ⓑ. Common to chassis	A8	Adjust for zero deflection. Repeat Steps 5 & 6 until no further improvement can be made.
7	"	High side to Pin 1 (grid) of 6BA6 1st IF Tube (2). Low side to chassis.	"	"	"	DC probe to Point Ⓐ. Common to chassis	A9	Adjust for maximum deflection.
8	"	High side to Pin 7 (grid) of 6BA7. (See prealignment instructions). Low side to chassis.	"	"	"	"	A10, A11	Adjust for maximum deflection. Repeat Steps 5 thru 8 until no further improvement can be made. Remove 100KΩ resistor from Pin 7 of 6BA7 and replace lead. Continue with FM-RF Alignment in Step 9.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulation signal with 60∿ modulation and 450KC sweep. Use 120∿ saw-tooth voltage in scope for horizontal deflection.

When applying signal from signal generator to converter grid disconnect lead from Pin 7 of 6BA7 to terminal #6 of band switch and solder a 100KΩ resistor from Pin 7 of 6BA7 to chassis making leads as short as possible.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (2). Low side to chassis.	10.7MC (freq. mod.)	FM (fully clockwise)	Tuning cap. fully open.	Vertical input to Point Ⓐ. Ground to chassis.	A7,A9	Disconnect 5 MFD cap. (9) from Point Ⓐ. Adjust A7 & A9 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
6	.01 MFD	High side to Pin 7 (grid) of 6BA7. (See prealignment instructions). Low side to chassis.	"	"	"	"	A11,A10	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Reconnect cap. (9) to Point Ⓐ.
7	.01 MFD	"	"	"	"	Vertical input to Point Ⓑ. Ground to chassis.	A8	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per Fig. 2. Remove 100KΩ resistor from Pin 7 of 6BA7 and replace lead. Continue with FM-RF Alignment in Step 9.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	300Ω carbon res.	High side to ungrounded FM ant. terminal. Low side to chassis. (Disconnect built-in antenna.	108.5MC (Unmodulated)	FM (fully clockwise)	Tuning cap. fully open.	DC probe to Point Ⓐ. Common to chassis	A12	Adjust for maximum deflection.
10	"	"	104.5MC (Unmodulated)	"	Tune for maximum deflection.	"	A13	Rock tuning cap. adjust for maximum deflection. Repeat Steps 9 & 10 until no further improvement can be made.

FIG. 1

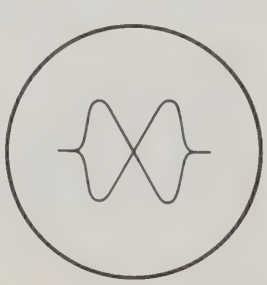
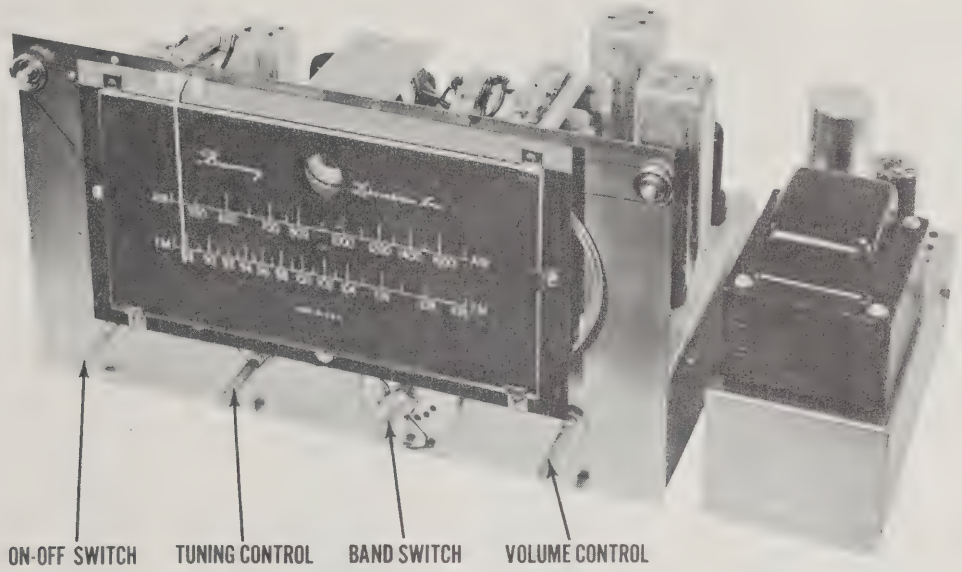
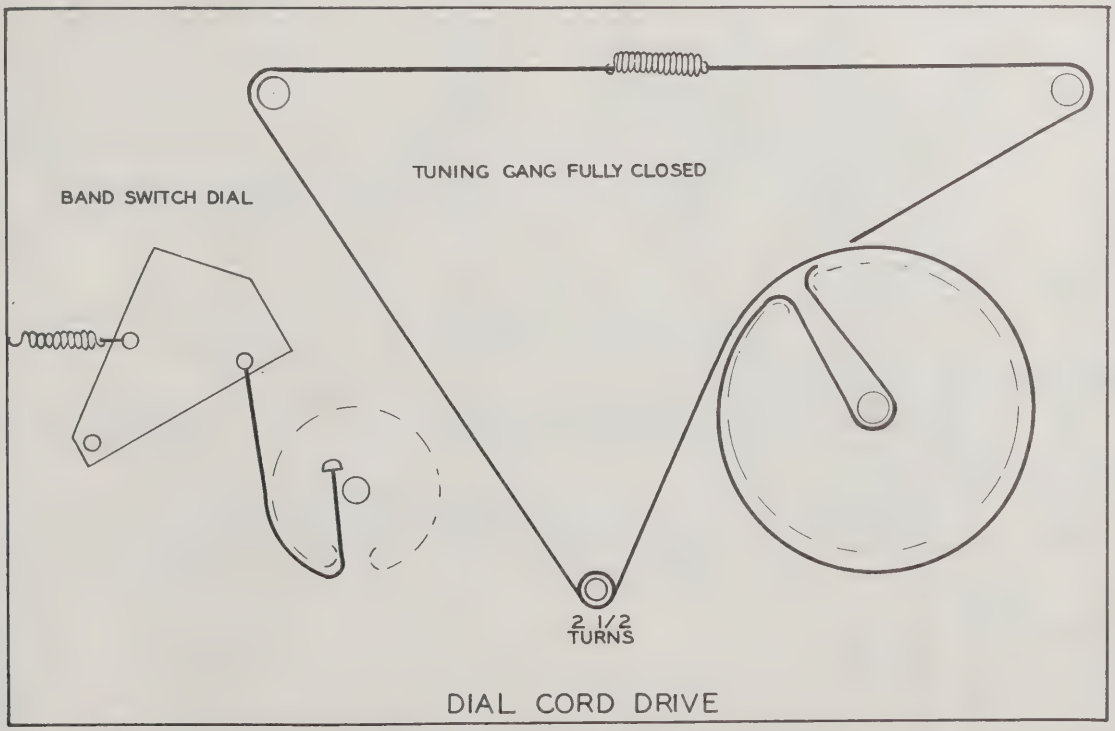


FIG. 2



BROWNING Model RJ-12A

TRADE NAME	Browning Models RJ-12A, RJ-14A
MANUFACTURER	Browning Laboratories, Inc. Winchester, Mass.
TYPE SET	AM-FM Superheterodyne Tuners with Model PF-12 AC Operated Power Supply.
TUBES(TWELVE)	Types 6AU6 FM RF Amp., 7F8 FM Converter, 6AU6 FM 1st IF, 6AU6 FM 2nd IF, 6SJ7 FM 1st Limiter, 6SJ7 FM 2nd Limiter, 6H6 FM Discriminator, 6SG7 AM RF Amp., 6SA7 AM Converter. 6SK7 AM IF Amp., 6U5/6G5 or 6E5 Tuning Eye, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.69 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1650 KC FREQ. MOD. 88-108MC



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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DATE 2/49-#494-6 Set#56-Folder #6

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.		6AU6	7BK	
2	FM Converter		7F8	8BW	
3	FM 1st IF Amp.		6AU6	7BK	
4	FM 2nd IF Amp.		6AU6	7BK	
5	FM 1st Limiter		6SJ7	8N	
6	FM 2nd Limiter		6SJ7	8N	
7	FM Discriminator		6H6	7Q	
8	AM RF Amp.		6SG7	8BA	
9	AM Converter		6SA7	8R	
10	AM IF Amp.		6SK7	8N	
11A	Tuning Eye		6U5/6G5	6R	
B	" "		6E5	6R	
12	Rectifier		5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BROWNING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13A	40	450		AF88J	UP4445	DY-2x40-450	EL-340	■ Filter
B	40	450						" "
14	.05	600		684-05	GT6S5	ST-6-05	TC-15	Audio Coupling
15	.1	400		484-.1	GT4P1	ST-4-1	TC-1	AM IF Screen Bypass
16	.01	600		684-01	GT6S1	ST-6-01	TC-11	AM IF Decoupling
17	.01	600		684-01	GT6S1	ST-6-01	TC-11	AVC Filter
18	.1	400		484-.1	GT4P1	ST-4-1	TC-1	" "
19	.01	600		684-01	GT6S1	ST-6-01	TC-11	AM Conv. Plate Decoup.
20	.01	600		684-01	GT6S1	ST-6-01	TC-11	AM Conv. Screen Byp.
21	.01	600		684-01	GT6S1	ST-6-01	TC-11	AVC Filter
22	.01	600		684-01	GT6S1	ST-6-01	TC-11	AM RF Screen Bypass
23	.02	400		484-02	GT4S2	ST-4-02	TC-12	AM RF Cathode Byp.
24	.05	600		684-05	GT6S5	ST-6-05	TC-15	AVC Filter
25	.1	400		484-.1	GT4P1	ST-4-1	TC-1	Indicator Bypass
26	1000	100		1468-001	1W5D1	MW.5-21	1FM-21	Tone Compensation
27A	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter- Cer. Note 1
B	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" "
28	50	300		1468-00005	5W5Q5	MO.5-45	1FM-45	AM Osc. Grid Cap. "
29	5	300		1469-000005	5R5V5	MOS.5-55	MS-55	Fixed Trimmer "
30	1000	100		1468-001	1W5D1	MW.5-21	1FM-21	De-emphasis
31	50	500		1469-00005	5R5Q5	MOS.5-45	MS-45	FM Diode Load Cap.
32	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass
33	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	2nd Limiter Plate Decoup. Cer.
34	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	2nd Limiter Screen Byp.
35	25	500		1468-000025	5W5Q25	MO.5-425	MS-425	IF Coupling
36	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	1st Limiter Screen Byp.- Cer.
37	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	1st Limiter Grid Filter
38	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Decoupling Cer.
39	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Screen Byp. "
40	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Cathode Byp. "
41	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	1st IF Plate Decoup. "
42	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	1st IF Screen Bypass "
43	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	1st IF Cath. Byp. "
44	4700	500		1467-005	1D5D5	MW.5-25	1FM-25	FM Conv. Plate Decoup."
45	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	FM Conv. Cath. Byp.
46	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	FM Osc. Feedback
47	25	500		1469-000025	5R5Q25	MOS.5-425	MS-425	FM Osc. Grid Cap.
48	5	300		1469-000005	5R5V5	MOS.5-55	MS-55	FM Osc. Coupling "
49	30	500			5R5Q3	MOS.5-43	MS-43	Fixed Padder
50	470	500		1468-0005	5W5T5	MO.5-35	1FM-35	Filament Bypass
51	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	FM RF Coupling
52	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	FM RF Plate Decoupling
53	470	500		1468-0005	5W5T5	MO.5-35	1FM-35	FM RF Screen Bypass
54	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	FM RF Coupling
55	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass Pwr. Supply- See Note 2

Note 1-Items 27A & B and 69 are combined into one unit.
Note 2-Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: MEISSNER PART No.	
103	BC Ant.Coil	3Ω	4Ω		14-1056	
104	FM " "	0Ω	0Ω			
105	Wave Trap Coil		31Ω			
106	BC RF Coil	63Ω	4Ω		14-1057	
107	FM RF Coil		0Ω			
108	BC Osc. Coil	2Ω	8Ω		14-1060	
109	FM " "		0Ω			
110	1st IF-AM	17Ω	17Ω	14487		
111	" " " FM	.3Ω	.3Ω	13596		
112	2nd IF AM	17Ω	16Ω	14488		
113	" " FM	.3Ω	.3Ω	13596		
114	3rd IF FM	.3Ω	.3Ω	13596		
115	FM Disc.T Trans.	1.1Ω	1.5Ω	13597		
116	FM RF Plate Choke		.5Ω			
117	Fil. Choke		.5Ω			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA	INSTALLATION NOTES
118	Bayonet	6-8	0.15	Brown			Type #47
119	"	6-8	0.15	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	BROWNING PART No.	NOTES
120	Switch		On-Off
121	"		Band
122	3 Gang Var. Cap (AM)		(21-394MMF, 20-392MMF, 34-412MMF)
123	3 Gang Var. Cap. (FM)		
124	Crystal (IN-34)		Detector

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	BROWNING PART No.	IRC PART No.	CLAROSTAT PART No.	
56A	1 Meg.	½		D13-137	M-63-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 56A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BROWNING PART No.	IRC PART No.	
57	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
58	330Ω	½		BW-½-330	Or.-Or.-Br. AM RF Cathode
59	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AM RF Screen
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
61	680Ω	½		BTS-680	Blue-Gray-Br. AM Osc. Coil Shunt
62	2200Ω	½		BTS-2200	Red-Red-Red AM Osc. Plate Decoupling
63	22KΩ	½		BTS-22K	Red-Red-Or. AM Osc. Grid
64	2200Ω	½		BTS-2200	Red-Red-Red AM Osc. Coil Shunt
65	22KΩ	1		BTS-22K	Red-Red-Or. AM Conv. Screen
66	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
67	100KΩ	1		BTA-100K	Br.-Blk.-Yl. AM IF Screen
68	2200Ω	½		BTS-2200	Red-Red-Red AM IF Decoupling
69	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Filter-See Note 2
70	390KΩ	½		BTS-390K	Or.-White-Yl. Diode Load
71	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation
72	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
73	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Tuning Ind. Grid-See Note 1
74	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tuning Ind. Plate Load
75	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. FM RF Grid
76	22KΩ	1		BTA-22K	Red-Red-Or. FM RF Screen
77	1500Ω	½		BTS-1500	Br.-Grn.-Red FM RF Decoupling
78	22KΩ	½		BTS-22K	Red-Red-Or. FM Osc. Grid
79	10KΩ	1		BTA-10K	Br.-Blk.-Or. FM Osc. Plate
80	1500Ω	½		BTS-1500	Br.-Grn.-Red FM Conv. Cathode
81	2200Ω	½		BTS-2200	Red-Red-Red FM Conv. Plate Decoupling
82	68Ω	½			Blue-Gray-Blk. FM 1st IF Amp. Cathode
83	10KΩ	½		BTS-10K	Br.-Blk.-Or. FM 1st IF Amp. Screen
84	8200Ω	½		BTS-8200	Gray-Red-Red FM 1st IF Amp. Decoupling
85	68Ω	½			Blue-Gray-Blk. FM 2nd IF Amp. Cathode
86	10KΩ	½		BTS-10K	Br.-Blk.-Or. FM 2nd IF Amp. Screen
87	2200Ω	½		BTS-2200	Red-Red-Red FM 2nd IF Amp. Decoupling
88	47KΩ	½		BTS-47K	Yl.-Vi.-Or. 1st Limiter Grid
89	100KΩ	1		BTA-100K	Br.-Blk.-Yl. 1st Limiter Screen Dropping
90	22KΩ	½		BTS-22K	Red-Red-Or. 1st Limiter Screen Bleeder
91	10KΩ	½		BTS-10K	Br.-Blk.-Or. 1st Limiter Plate Load
92	22KΩ	½		BTS-22K	Red-Red-Or. 2nd Limiter Grid
93	100KΩ	1		BTA-100K	Br.-Blk.-Yl. 2nd Limiter Screen Dropping
94	22KΩ	½		BTS-22K	Red-Red-Or. 2nd Limiter Screen Bleeder
95	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd Limiter Plate Decoupling
96	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Disc. Diode Load
97	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " "
98	100KΩ	½		BTS-100K	Br.-Blk.-Yl. De-emphasis
99	1000Ω	½		BTS-1000	Br.-Blk.-Red FM Ant. Coil Sec. Shunt-See Note 1
100	2000Ω	25		DG-2000	Filter
101	200Ω	10		AB-200	Surge Limiter
124	10KΩ	½		BTS-10K	Br.-Blk.-Or. FM Ant. Coil Pri.-See Not 1
125	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tuning Indicator

Note 1-Not used in all models.
Note 2-Items 69, 27A & B are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROWNING PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
102	117V AC @ .69A	720V CT .07A DC	5.3V AC @ 2.0A	6.5V AC @ 3.5A	14235	P-948	T22R05	P-2953

DATE 2/49-#464-6 Set#56-Folder #6

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use insulated alignment screwdriver for all adjustments.

AM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 45KC sweep.
Connect synchronized sweep voltage output of signal generator to horizontal sweep input of scope. If signal generator does not have this output, the voltage may be taken from the AC power line. There may be some phase shift encountered between signal generator and scope horizontal sweep. If provision is made for this in the scope rotate phase control until the two curves coincide. If no provision is made for this or sweep voltage is taken from the power line the same thing may be accomplished by inserting a capacitor of suitable value (.01 to .1 MFD) in series with the horizontal sweep input.
To provide a marker pip for correct alignment use an accurately calibrated AM signal generator set to 456KC. Use a 500 MMFD mica condenser in series with the AM signal generator output and connect in parallel with the FM signal generator. In all cases adjust FM signal generator so that marker pip is at center of scope horizontal sweep line. Attenuate output of AM signal generator so that marker pip is just visible.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.01 MFD	High side to Pin 4 (grid) of 6SK7. Low side to chassis.	456KC (freq. mod.)	AM	Tuning cap. fully open.	Vertical input to Point A. Ground to chassis.	A1,A2, A3	Adjust for maximum amplitude of pattern and maximum symmetry on either side of marker pip of pattern per Fig. 1.
2	.01 MFD	High side to center stator of AM tuning cap. Low side to chassis.	"	"	"	"	A4,A5, A6	"

AM IF ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to center stator of AM tuning cap. Low side to chassis.	456KC	AM	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4, A5,A6	Adjust A2 & A5 completely counter-clockwise. Adjust A1, A3, A4 & A6 for maximum output. Then adjust A2 & A5 for maximum out.

AM RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a VTVM is not available a 20,000Ω per volt DC voltmeter may be used.
Attenuate output of signal generator to maintain VTVM reading of about 2 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3	200MMFD	High side to either FM ant. terminal. Low side to chassis.	1400KC	AM	1400KC	DC probe to Point A. Common to chassis	A7	Adjust for maximum deflection.
4	200MMFD	"	"	"	Tune for maximum deflection.	"	A8,A9	"
5	200MMFD	"	600KC	"	"	"	A10	Rock tuning cap. and adjust for maximum deflection. Repeat Steps 3, 4 & 5 until no further improvement can be made.
6	200MMFD	High side to either FM ant. terminal. Low side to chassis.	456KC	"	Tuning cap. fully closed	"	A11	Adjust for minimum deflection.

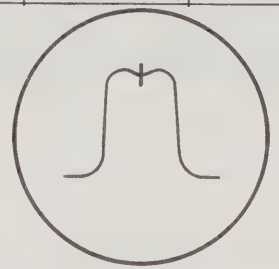


FIG.1

FOR FM ALIGNMENT
SEE PAGE FOUR

FOR AM ALIGNMENT SEE PAGE 3

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ~ modulation and 450KC sweep.

Connect synchronized sweep voltage output of signal generator to horizontal sweep input of scope. If signal generator does not have this output, the voltage may be taken from the AC power line. There may be some phase shift encountered between signal generator and scope horizontal sweep. If provision is made for this in the scope rotate phase control until the two curves coincide. If no provision is made for this or sweep voltage is taken from power line the same thing may be accomplished by inserting a capacitor of suitable value (.01 to .1 MFD) in series with the horizontal sweep input.

To provide a marker pip for correct alignment use an accurately calibrated AM sig. gen. set to 8.25MC. Use a small mica condenser in series with AM Signal Generator output and connect in parallel with the FM Signal Generator. In all cases adjust FM Signal Generator so that marker pip is at center of scope horizontal sweep line. Attenuate output of AM Signal Generator so that marker pip is just visible.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7	.01 MFD	High side to (grid) of 6AU6 1st FM IF Tube (3). Low side to chassis.	8.25MC (Freq. Mod.)	FM	Tuning cap. fully open.	Vertical input to Point ⓕ. Ground to chassis.	A12, A13 A14, A15	Adjust for maximum amplitude of pattern and for maximum symmetry on either side of marker pip of pattern per Fig. 1.
8	.01 MFD	High side to center stator of FM tuning cap. Low side to chassis.	"	"	"	"	A16, A17	"
9	.01 MFD	High side to (grid) of 6AU6 1st FM IF Tube (3). Low side to chassis.	"	"	"	Vertical input to Point ⓕ. Ground to Point ⓓ.	A18, A19	Alternately adjust A18 for maximum amplitude and straightness of diagonal line and A19 for centering of "S" curve about marker pip of pattern per Fig. 2. Continue with FM-RF Alignment in Step 12.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

For plotting IF curve, vary signal generator 150KC above and below 8.25MC in steps of 20KC. Record reading of VTVM for each setting of signal generator and plot curve. If curve is not similar to that of Fig. 1. repeat last two adjustments and replot curve.

For plotting discriminator curve vary signal generator 100KC above and below 8.25MC in steps of 20KC. Record readings of VTVM for each setting of sig. gen. and plot curve. If curve is not similar to that of Fig. 2, repeat adjustment of A18 and A19 and replot curve.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	.01 MFD	High side to Pin 1 (grid) of 6AU6 2nd FM IF Tube (4). Low side to chassis.	8.25MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point ⓔ. Common to chassis	A12, A13	Solder a shunt cap. of 10 MMFD. across secondary of 3rd FM IF Transformer (114). Adjust A13 for maximum deflection. Transfer shunting cap. to primary of same transformer and adjust A12 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A12 & A13. Remove shunt cap.
8	.01 MFD	High side to Pin 1 (grid) of 6AU6 1st FM IF Tube (3). Low side to chassis.	"	"	"	"	A14, A15	Solder shunt cap. of 10 MMFD across secondary of 2nd FM IF Transformer (113). Adjust A15 for maximum deflect. Transfer shunt cap. to primary of same transformer and adjust A14 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A14 & A15. Remove shunt cap.
9	.01 MFD	High side to center stator of tuning cap. Low side to chassis.	"	"	"	"	A16, A17	Solder a shunt cap. of 10 MMFD across secondary of 1st IF Transformer (111). Adjust A17 for maximum deflection. Transfer shunt cap. to primary of same transformer and adjust A16 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A16 or A17. Remove shunt cap.
10	.01 MFD	High side to Pin 4 (grid) of 6SN7 1st Limiter Tube (5). Low side to chassis.	"	"	"	DC probe to Point ⓑ. Common to chassis	A18	Adjust for maximum deflection.
11	.01 MFD	"	"	"	"	DC probe to Point ⓐ. Common to chassis	A19	Adjust for zero deflection. Plot discriminator curve per prealignment instructions. Continue with FM-RF Alignment in Step 12.

FM RF ALIGNMENT

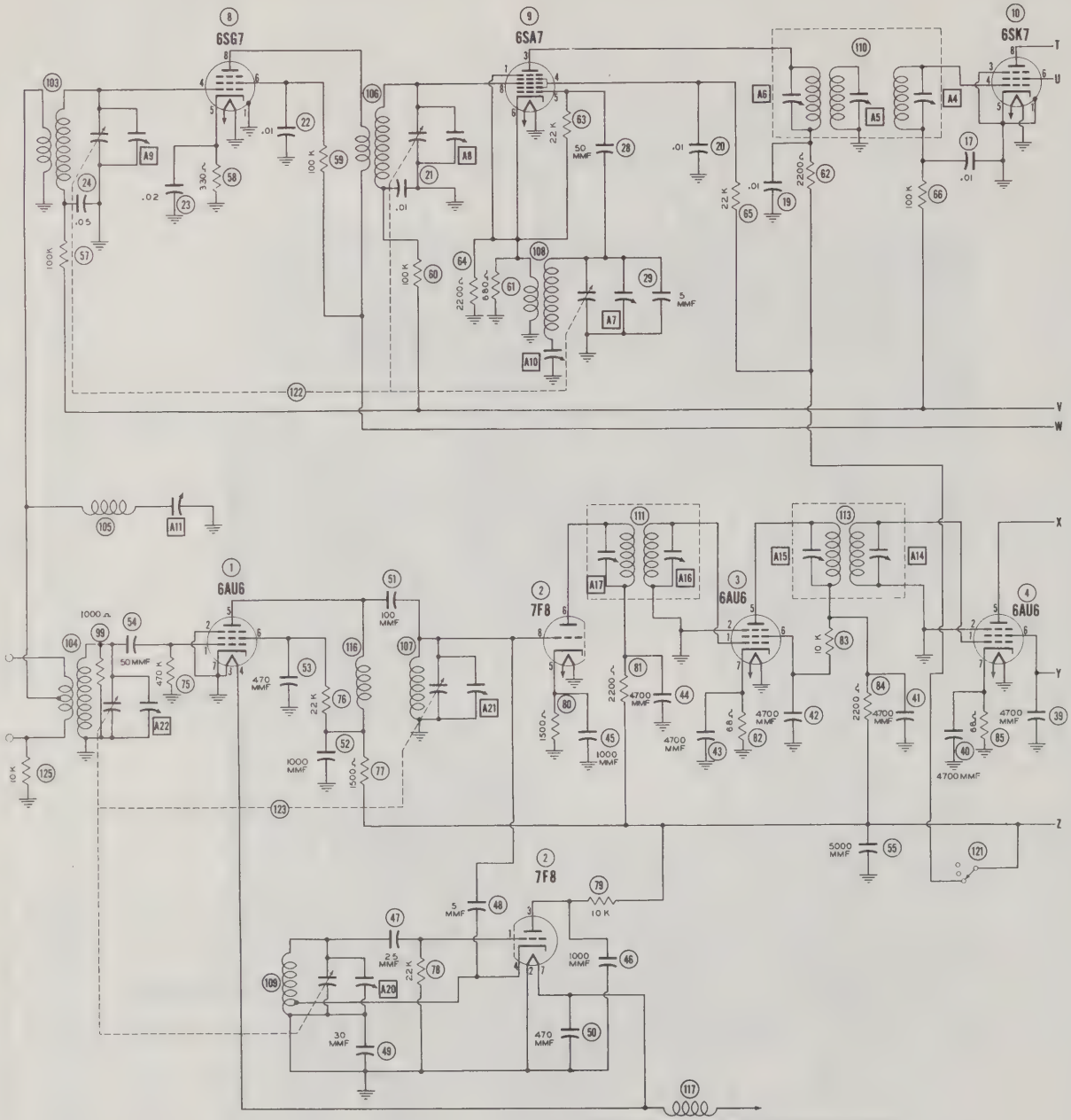
Attenuate output of signal generator to maintain VTVM reading of 1 to 2 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12	2- 150Ω carbon res.	Each side in series with 150Ω to antenna terminals.	108MC (Unmodulated)	FM	108MC	DC probe to Point ⓒ. Common to chassis	A20	Adjust for maximum deflection.
13	"	"	90MC (Unmodulated)	"	90MC	"	FM Osc. Coil (119)	With a non-conducting rod compress or expand osc. coil slightly for maximum deflection. Repeat Steps 12 and 13 until no further improvement can be made.
14	"	"	108MC (Unmodulated)	"	Tune for maximum deflection.	"	A21	Rock tuning cap. and adjust for maximum deflection.
15	"	"	90MC (Unmodulated)	"	"	"	FM RF Coil (107)	With a non-conducting rod compress or expand RF Coil slightly for maximum deflection. Repeat Steps 14 & 15 until no further improvement can be made.
16	"	"	108MC (Unmodulated)	"	"	"	A22	Rock tuning cap. and adjust for maximum deflection.

FIG. 1

FIG. 2

15 66 67 108 16 68 18 29 61 B 72 69 27 124 26 71 70 31 98 F 95 96 33 97 E 92 93 34 91 35 90 36 37 49 89 88 55 C 86 87 38 39 40 85
109 79 47 46 78 48 84 41 80 83 45 42 82 117 43 51 116 52 76 77 44 81
60 28 62 17 20 65 106 19 63 59 64 21 22 58 23 24
56 A 103 57 14 121 105 D 30 A11 125 25 A21 107 A22 99 54 104 50 53 75 124 120



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6AU6	.1VDC	0V.	0V.	6.5VAC	220VDC	150VDC	0V.	-
‡ 2	7F8	-2.2VDC§	0V.	175VDC	0V.	8VDC	230VDC	6.5VAC	0V.
‡ 3	6AU6	0V.	0V.	6.5VAC	0V.	205VDC	120VDC	1VDC	-
‡ 4	6AU6	0V.	0V.	6.5VAC	0V.	205VDC	120VDC	1VDC	-
‡ 5	6SA7	0V.	0V.	0V.	-.9VDC	0V.	8VDC	6.5VAC	230VDC
‡ 6	6SJ7	0V.	0V.	0V.	-.2VDC	0V.	35VDC	6.5VAC	90VDC
‡ 7	6H6	0V.	0V.	-.7VDC	.1VDC	-.7VDC	-.6VDC	6.5VAC	0V.
8	6J7	0V.	0V.	1.3VDC	-.1VDC	1.3VDC	110VDC	6.5VAC	225VDC
9	6SA7	0V.	0V.	220VDC	6.5VDC	-6VDC§	0V.	6.5VAC	-.2VDC
10	6SK7	0V.	0V.	0V.	-.8VDC	0V.	65VDC	6.5VAC	215VDC
11	6U5/6G5	-	-	-	-	-	-	-	-
12	5Y3GT	0V.	390VDC	0V.	360VAC	0V.	360VAC	0V.	390VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

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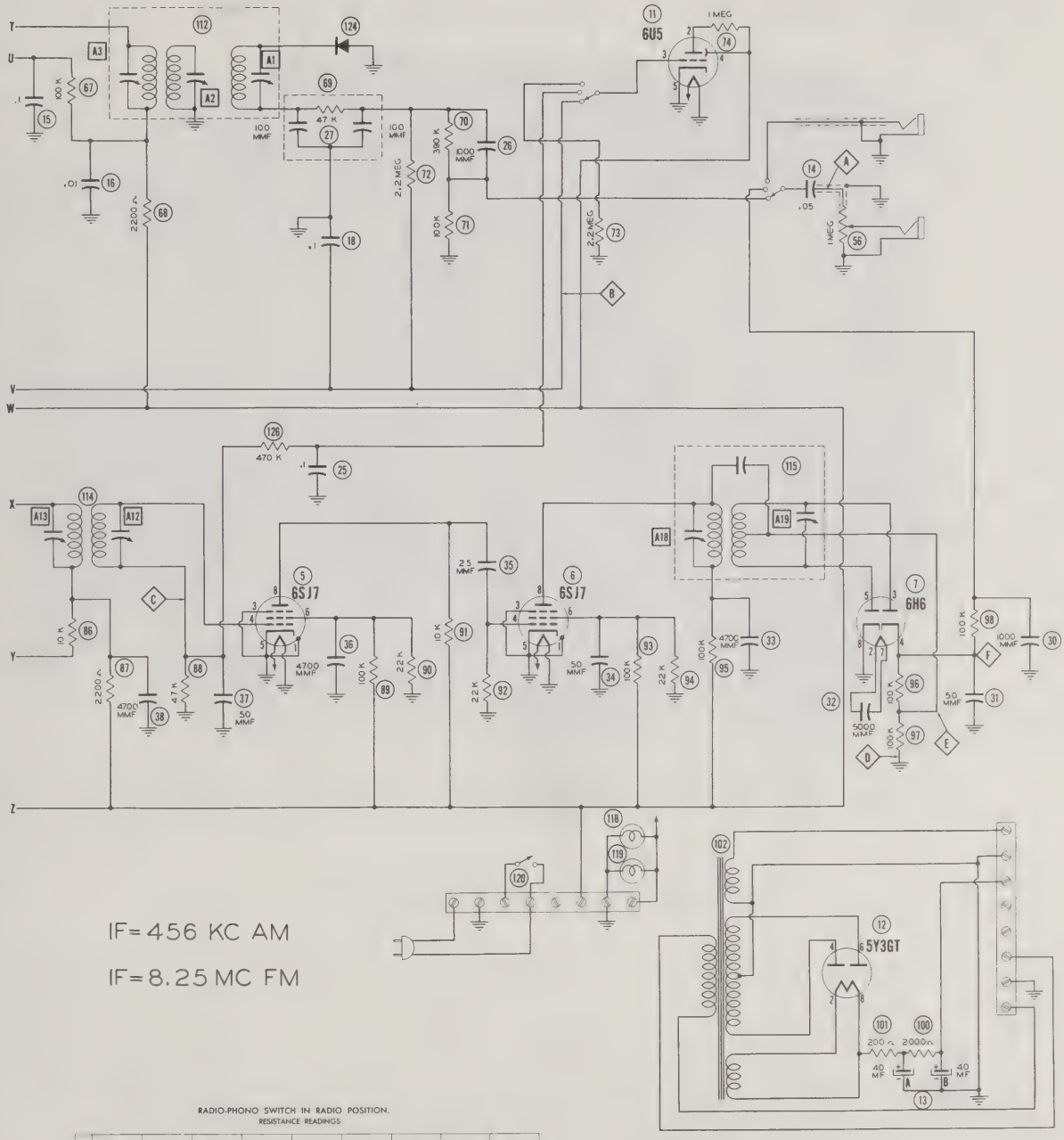

RADIO-PHONO SWITCH IN RADIO POSITION.
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	[illegible]	47K	0Ω	0Ω	.1Ω	44KΩ	[illegible]	0Ω	-
‡ 2	6SJ7	270KΩ	0Ω	52KΩ	0Ω	1.5MΩ	60KΩ	.1Ω	0Ω
‡ 3	6SJ7	.3Ω	0Ω	.1Ω	0Ω	44KΩ	54KΩ	75Ω	-
‡ 4	6SJ7	.3Ω	0Ω	.1Ω	0Ω	44KΩ	54KΩ	75Ω	-
‡ 5	6H6	0Ω	0Ω	0Ω	50KΩ	0Ω	22KΩ	.1Ω	50KΩ
‡ 6	6SJ7	0Ω	0Ω	0Ω	27KΩ	0Ω	27KΩ	.1Ω	140KΩ
‡ 7	6H6	0Ω	0Ω	100KΩ	200KΩ	100KΩ	110KΩ	.1Ω	0Ω
8	6Y3GT	0Ω	Ω	340Ω	2.7 Meg.	330Ω	140KΩ	.1Ω	42KΩ
9	6SJ7	0Ω	0Ω	44KΩ	65KΩ	22KΩ	2Ω	.1Ω	2.7 Meg.
10	6SJ7	0Ω	0Ω	0Ω	2.7 Meg.	0Ω	140KΩ	.1Ω	44KΩ
11	6U5/6G5	-	-	-	-	-	-	-	-
12	5Y3GT	INF.	40KΩ	INF.	125Ω	INF.	110Ω	INF.	40KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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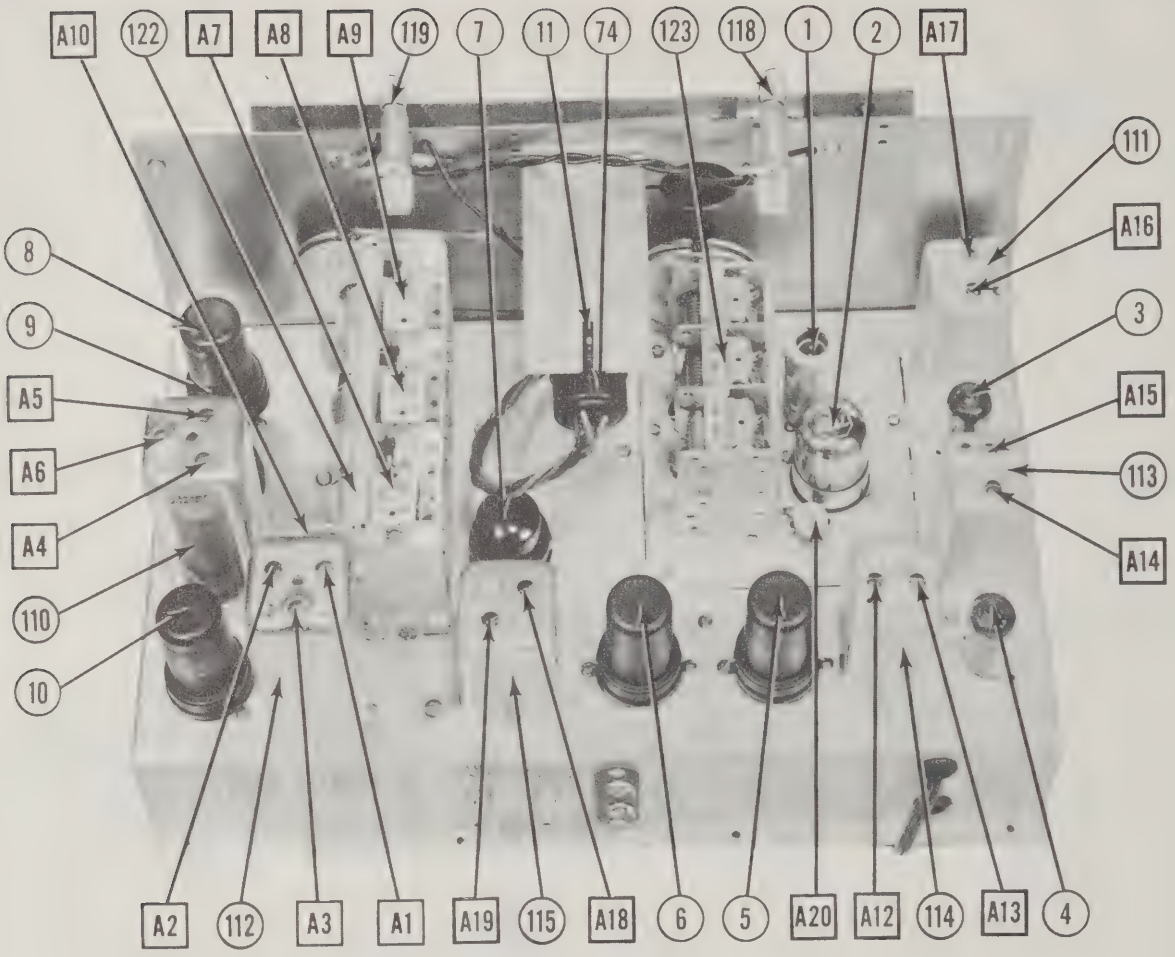
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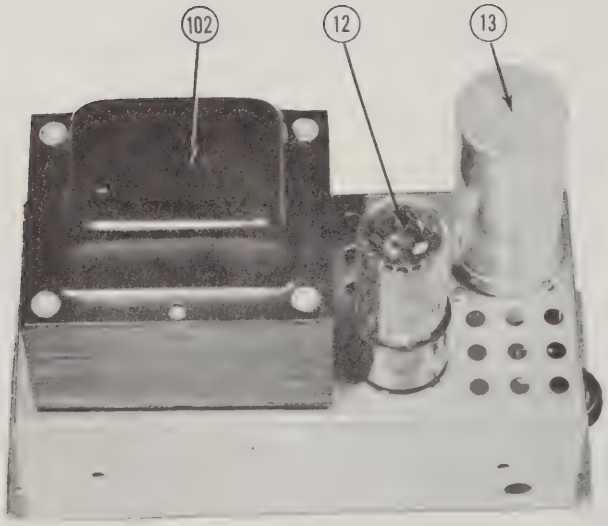
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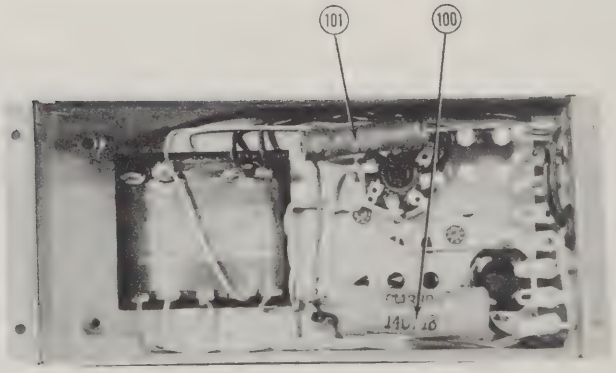
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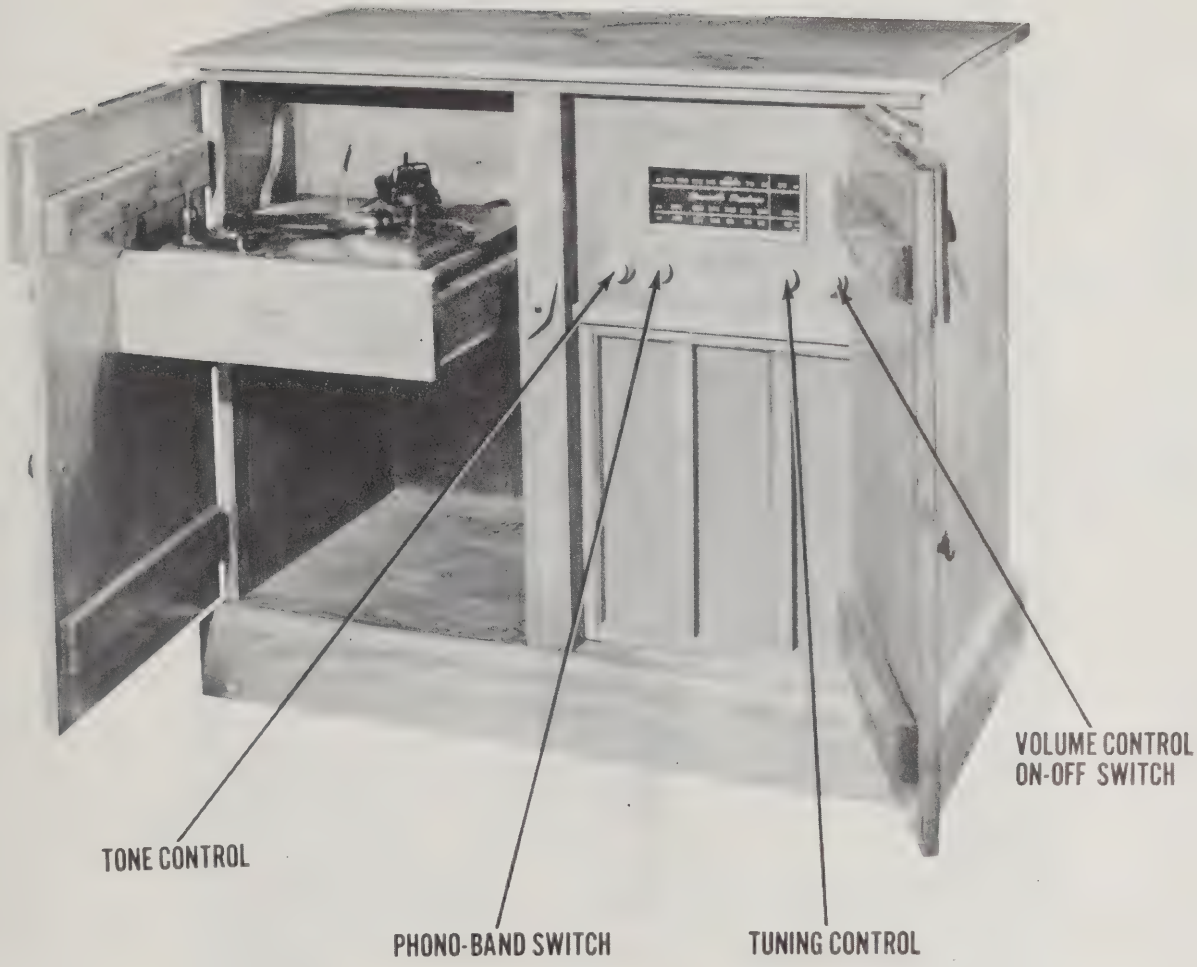
BRUNSWICK MODELS
D-1000, D-1100, T-9000



BRUNSWICK MODELS
D-1000, D-1100, T-9000

BRUNSWICK Model D-1000

TRADE NAME	Brunswick, Models D-1100, T-9000
MANUFACTURER	Radio & Television Inc., 244 Madison Ave.,New York, 16, N.Y.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(FOURTEEN)	Types, 6AG5 FM RF Amp., 6SB7Y FM Converter, 6SG7 or 6SK7 AM RF Amp., 6SA7 AM Converter 6SK7 FM 1st IF Amp., 6SK7 FM 2nd IF-AM 1st IF, 6SK7 FM 3rd IF Amp., 6H6 FM Detector, 6SQ7 AM Det.-AVC-1st AF, 6U5/6G5 Tuning Indicator, 6SN7GT 2nd AF-Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.71 Amp. @ 117 Volts AC
TUNUNG RANGE-BROADCAST	540-1620KC FREQ.MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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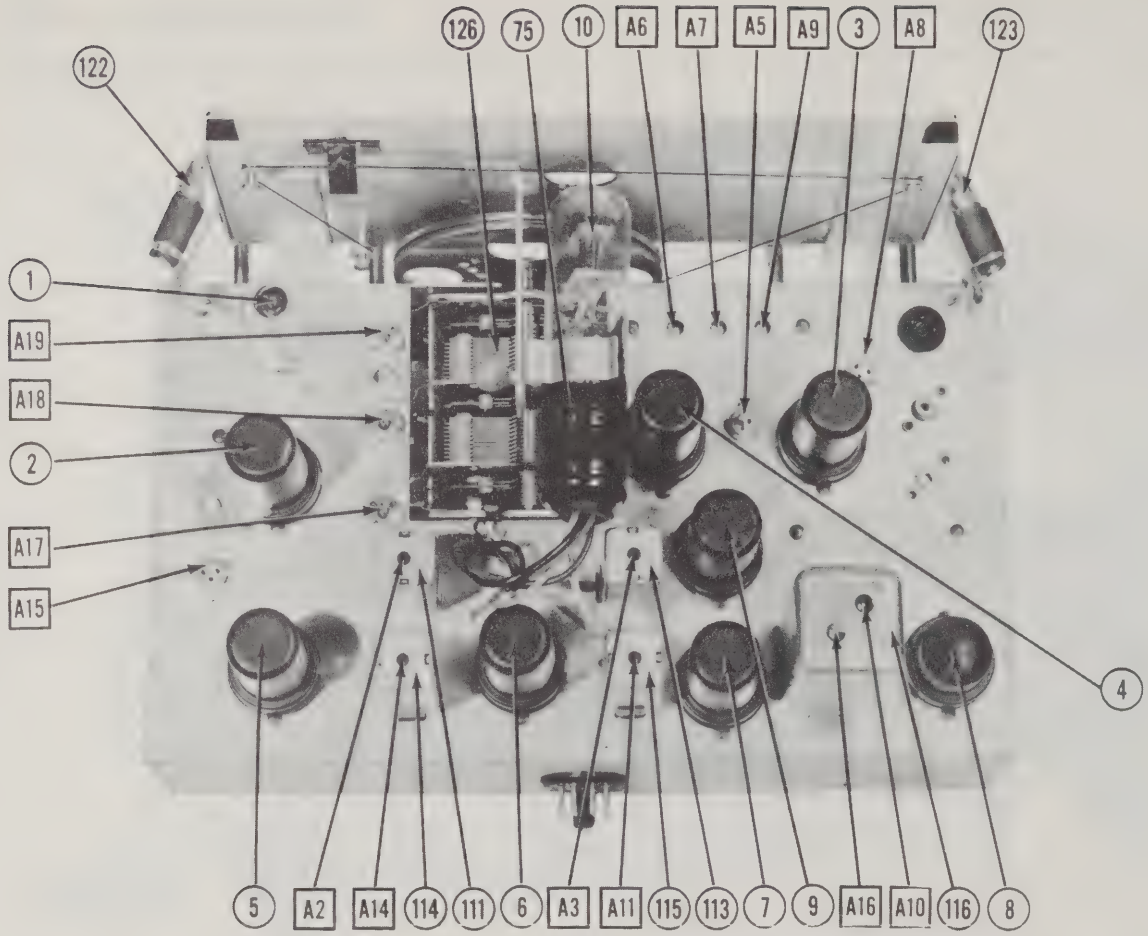
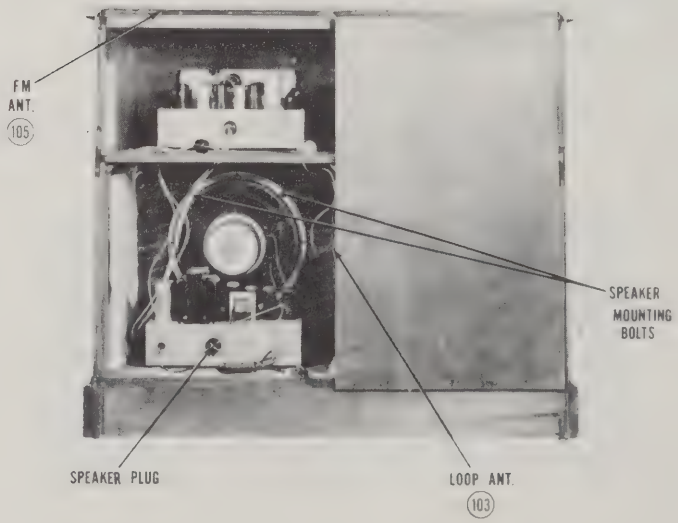
DATE 2/49-#494-7 Set#56-Folder #7

CHASSIS—TOP VIEW



DISASSEMBLY INSTRUCTIONS

1. Disconnect phono motor and pickup plugs.
2. Remove speaker plug from front of output chassis.
3. Remove power plug from rear of tuner chassis.
4. Remove ten hex type metal screws holding output chassis to mounting frame. Remove output chassis.
5. Remove speaker.
6. Remove three push on type and two set screw type control knobs.
7. Remove loop antenna leads from loop.
8. Remove FM antenna plug from tuner chassis.
9. Remove four hex type metal bolts from underneath tuner chassis.
10. Remove tuner chassis.
11. Remove twelve hex type metal screws holding tuner chassis to chassis mount.



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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: BRUNSWICK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
1	FM RF Amp.	6AG5	6AG5	7BD	
2	FM Converter	6SB7Y	6SB7Y	8R	
3A	AM RF Amp.	6SG7	6SG7	6BK	
B	AM RF Amp.	6SK7	6SK7	8N	
4	AM Converter	6SA7	6SA7	7R	
5	FM 1st IF Amp.	6SK7	6SK7	8N	
6	FM 2nd IF-AM 1st IF	6SK7	6SK7	8N	
7	FM 3rd IF Amp.	6SK7	6SK7	8N	
8	FM Detector	6H6	6H6	7Q	
9	AM Det.-AVC-1st AF	6SQ7	6SQ7	8Q	
10	Tuning Indicator	6U5/6G5	6U5/6G5	6R	
11	2nd AF-Phase Inv.	6SN7GT	6SN7GT	8BD	
12	Power Output	6K6GT	6K6GT	7S	
13	" "	6K6GT	6K6GT	7S	
14	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BRUNSWICK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
15A	30	450		AF4444J*	UP222245*	DY-314	EL-420*	● Filter
B	30	450						■ "
C	20	450				M-20-450		▲ "
D	40	25		PRS25/50	BR502		TA-50	Cathode Bypass
16	2	25	CE101		BR245			Stabilizing Cap.
17	.05	200	CP105	484-05	GT2S5	ST-4-05	TC-15	Line Filter
18	.05	400	CP104	484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
19	.05	400	CP104	484-05	GT4S5	ST-4-05	TC-15	" "
20	.01	200	CP103	484-01	GT2S1	ST-4-01	TC-11	Tone Comp.
21	.05	400	CP104	484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
22	.01	200	CP103	484-01	GT2S1	ST-4-01	TC-11	" "
23	.01	200	CP103	484-01	GT2S1	ST-4-01	TC-11	Fil. Bypass-Note 1
24	.05	200	CP105	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
25	.05	200	CP105	484-05	GT2S5	ST-4-05	TC-15	" "
26	.05	400	CP104	484-05	GT4S5	ST-4-05	TC-15	AM Conv. Screen Byp.
27	.01	400	CP102	484-01	GT4S1	ST-4-01	TC-11	AM RF Decoupling
28	.01	400	CP102	484-01	GT4S1	ST-4-01	TC-11	FM 2nd IF Screen Byp.
29	.05	400	CP104	484-05	GT4S5	ST-4-05	TC-15	RF Byp. Pwr. Supply-See Note 1
30	200	300	CC145	1468-0002	5W5T2	MO.5-32	1FM-32	AF PlateBypass -Cer.
31	200	300	CC145	1468-0002	5W5T2	MO.5-32	1FM-32	Tone Compensation "
32	100	300	CC142	1468-0001	5W5T1	MO.5-31	1FM-31	AM Diode RF Filter "
33	100	300	CC142	1468-0001	5W5T1	MO.5-31	1FM-31	" " " " "
34	51	300	CC141	1468-00005	5W5Q5	MO.5-45	1FM-45	AM Osc. Grid Cap. "
35	200	300	CC145	1468-0002	5W5T2	MO.5-32	1FM-32	AM RF Coupling "
36	150	300	CC178	1469-00015	5R5T15	MOS.5-315	1FM-315	Fixed Padder "
37	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	De-emphasis "
38	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass "
39	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	FM Diode Load Cap.-See Note 2 "
40	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
41	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM 3rd IF Decoup. "
42	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM 3rd IF Grid Filter"
43	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM 3rd IF Cath. Byp.-See Note 1 -Cer.
44	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass-See Note 1 "
45	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM 1st IF Decoup. "
46	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM 1st IF Cath. Byp. See Note 1 "
47	51	300	CC141	1468-00005	5W5Q5	MO.5-45	1FM-45	FM IF Coupling "
48	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM RF Byp. Pwr. Supply"
49	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM Conv. Decoup. "
50	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	Fil. Bypass "
51	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	RF Byp. Pwr. Supply " See Note 1

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BRUNSWICK PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
99	117VAC @ .71A	620VCT .095ADC	5.2VAC @ 2.0A	6.6VAC @ 4.45A	PT119	P-4080#	T22R32#	P-3153#

#Drill new mounting holes and add series res. to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BRUNSWICK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
100	11KΩ CT	6.4Ω	413Ω CT	.7Ω	OT120	A-3852		A-2904	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BRUNSWICK PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.				
101	PM	6.4Ω		ST-102 Mod. P13S	12A6	
	CONE DIA.	VC DIA.				
102	11-3/8"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BRUNSWICK PART No.	MEISSNER PART No.
103	AM Loop Ant.		1Ω	AL236	
104	Loop Load. Coil		0Ω		
105	FM Dipole		2Ω	AN183	
106	FM Ant.Coil		0Ω	FM221	
107	AM IF Wave Trap		13Ω	TR184	
108	FM RF Coil		0Ω	FM221	
109	AM Osc.Coil	.8Ω	5.5Ω	OS182	14-1060
110	FM Osc.Coil		0Ω	FM222	
111	AM 1st IF	18Ω	17.5	KT163	16-6678
112	FM 1st IF		.1Ω	IF180	
113	AM 2nd IF	15Ω	16Ω	KT164	16-6678
114	FM 2nd IF	1Ω	.5Ω	KT161	
115	FM 3rd IF	1.8Ω	.2Ω	KT162	
116	FM Ratio Det.	.7Ω	.1Ω	RD168	
117	FM RF Plate Choke		.1Ω	LC181	
118	Fil. Choke		.1Ω	LC181	
119	Fil. Choke		.1Ω	LC181	
120	Line Ant. Choke		.1Ω	LC181	
121	-Line Ant. Choke		.1Ω	LC181	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BRUNSWICK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
52	6000	500		1467-006	1D5D6	MW.5-26	1FM-26	Fil. Bypass-See Note 1
53	30	300		1469-000025	5R5Q3	MOS.5-43	MS-43	FM Osc. Grid Cap. "
54	30	300		1469-000025	5R5Q3	MOS.5-43	MS-43	FM RF Coupling "
55	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM RF Decoupling "
56	1500	300	CC144	1467-0015	1W5D15	MW.5-215	1FM-215	FM RF Cath. Byp. "

*Parallel two sections.
Note 1-Not used in all models.
Note 2-If either Item 39 or 40 is replaced with a cap. of different value the other must be replaced with a capacitor of the same value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BRUNSWICK PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
57A	1 Meg.	½	VC-150	D13-137	AM-66-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 57A per instructions
C	Switch		" "	41	SW-A	" " " "
58A	250KΩ	½	VC-151			Tone Control-Front Section†
B	100KΩ	½				Tone Control-Rear Section

†Front section tapped @ 125KΩ.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BRUNSWICK PART No.	IRC PART No.	IDENTIFICATION CODES
59	68Ω	½	RS68B		Blue-Gray-Blk. FM RF Cathode
60	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red FM RF Decoup.
61	20KΩ	½	RS203B	BTS-22K	Red-Blk.-Or. FM Osc. Grid
62	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red FM Conv. Decoup.
63	150KΩ	½	RS151B	BTS-150K	Br.-Grn.-Yl. FM 1st IF Grid
64	150Ω	½			Br.-Grn.-Br. FM 1st IF Cathode-See Note 3
65	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red FM 1st IF Decoup.
66	20KΩ	½	RS203B	BTS-22K	Red-Blk.-Or. FM 2nd IF Transformer Sec. Shunt
67	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red FM 2nd IF Decoup.
68	150KΩ	½	RS151B	BTS-150K	Br.-Grn.-Yl. FM 3rd IF Grid
69	150Ω	½			Br.-Grn.-Br. FM 3rd IF Cathode-See Note 3
70	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red FM 3rd IF Decoup.
71	51KΩ	½	RS473B	BTS-47K	Grn.-Br.-Or. De-emphasis
72	12KΩ	½	RS123B	BTS-12K	Br.-Red-Or. Ratio Det. Diode Load
73	12KΩ	½	RS123B	BTS-12K	Br.-Red-Or. " " " "
74	1 Meg.	½	RS105B	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
75	1 Meg.	½	RS105B	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Ind. Plate Load
76	2.2 Meg.	½	RS225B	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
77	6800Ω	½	RS682B	BTS-6800	Blue-Gray-Red AM RF Plate Load
78	1000Ω	½	RS102B	BTS-1000	Br.-Blk.-Red AM RF Decoup.
79	5600Ω	1	RS562	BTA-5600	Grn.-Blue-Red AM Conv. Screen-See Note 3
80	20KΩ	½	RS203B	BTS-22K	Red-Blk.-Or. AM Osc. Grid
81	51KΩ	½	RS473B	BTS-47K	Grn.-Br.-Or. Diode Filter
82	1 Meg.	½	RS105B	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
83	1 Meg.	½	RS105B	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
84	150KΩ	½	RS151B	BTS-150K	Br.-Grn.-Yl. AM Conv. Grid
85	270KΩ	½	RS274B	BTS-270K	Red-Vi.-Yl. Series Phono
86	10 Meg.	½	RS106B	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
87	270KΩ	½	RS274B	BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
88	12KΩ	½	RS123B	BTS-12K	Br.-Red-Or. Tone Compensation
89	1 Meg.	½	RS105B	BTS-1 Meg.	Br.-Blk.-Grn. 2nd AF Grid
90	3300Ω	½	RS322B	BTS-3300	Or.-Or.-Red 2nd AF Cathode
91	100KΩ	½	RS104B	BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
92	47KΩ	½	RS473B	BTS-47K	Yl.-Vi.-Or. Phase Inv. Grid
93	3300Ω	½	RS322B	BTS-3300	Or.-Or.-Red Phase Inv. Cathode
94	100KΩ	½	RS104B	BTS-100K	Br.-Blk.-Yl. Phase Inv. Plate Load
95	470KΩ	½	RS474B	BTS-470K	Yl.-Vi.-Yl. Output Grid
96	470KΩ	½	RS474B	BTS-470K	Yl.-Vi.-Yl. " "
97A	400Ω	5	}	AB-400	Output Cathode
B	2000Ω	6	RD123	AB-2000	Filter
C	1250Ω	6	}	AB-1250	"
98	51KΩ	½	RS473B	BTS-47K	Grn.-Br.-Or. Feedback

Note-3-Not used in all models.

DATE 2/49-#494-7 Set#56-Folder #7

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

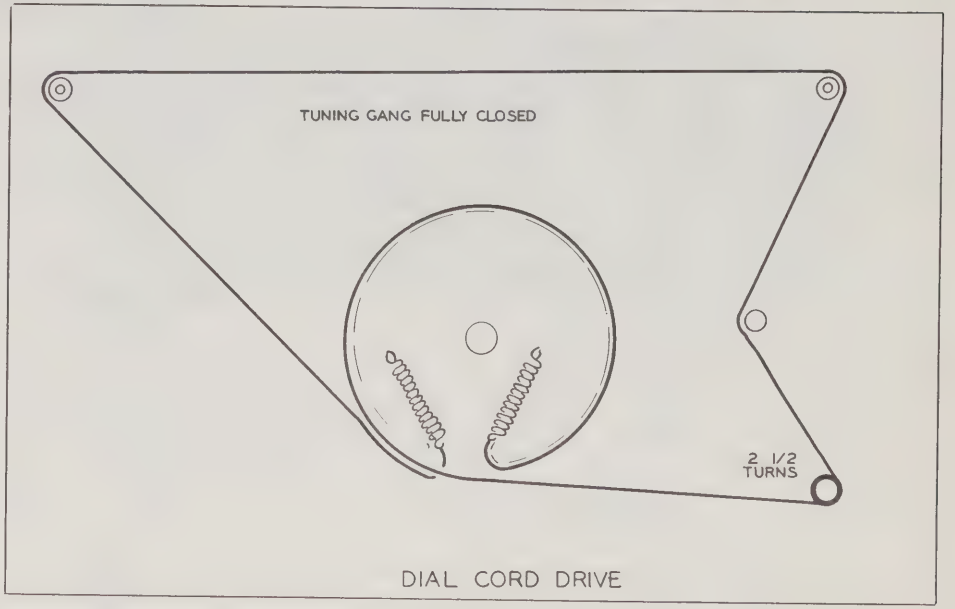
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA BRUNSWICK PART No.		INSTALLATION NOTES
122	Bayonet	6-8	0.15	Brown	PL147		Type 47
123	"	6-8	0.15	"	PL147		" "

PHONO CARTRIDGE

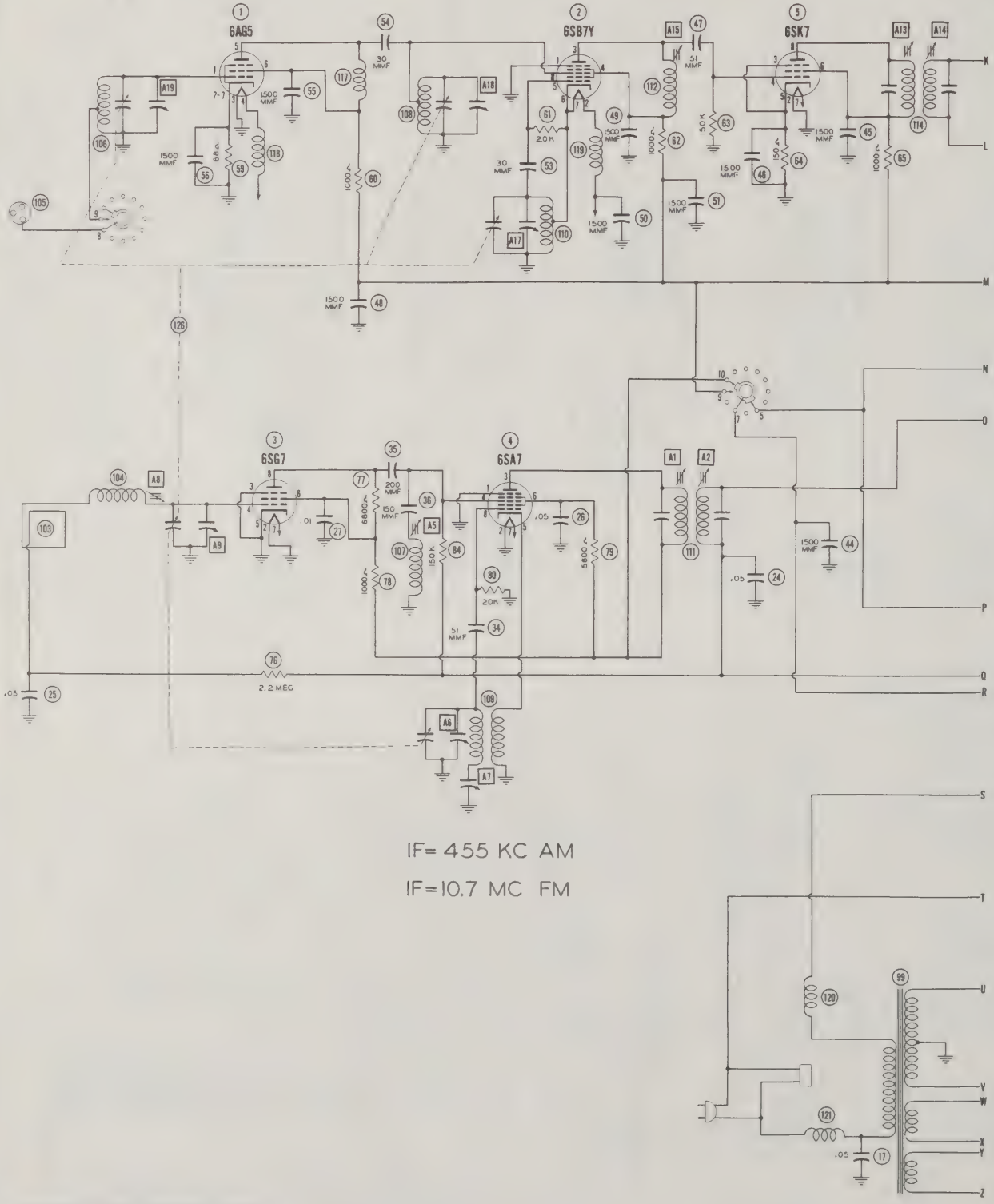
ITEM No.	REPLACEMENT DATA BRUNSWICK PART No.	ASTATIC PART No.	REMARKS
124		QT3-J or QT3-M	

MISCELLANEOUS

ITEM No.	PART NAME	BRUNSWICK PART No.	NOTES
125	Switch	SW124	Band
126	2 Gang Var. Cap	CV106	(13-469MMF, 12-462MMF)
A6	Trimmer Strip	CT107	BC Osc. Adj.
A7			" " "
A9			BC Ant. Adj.
A17	Trimmer	CT175	FM Osc. Adj.
A18	"	CT174	FM RF Adj.
A19	"	CT174	FM RF Ant. Adj.



DIAL CORD DRIVE



IF= 455 KC AM

IF=10.7 MC FM

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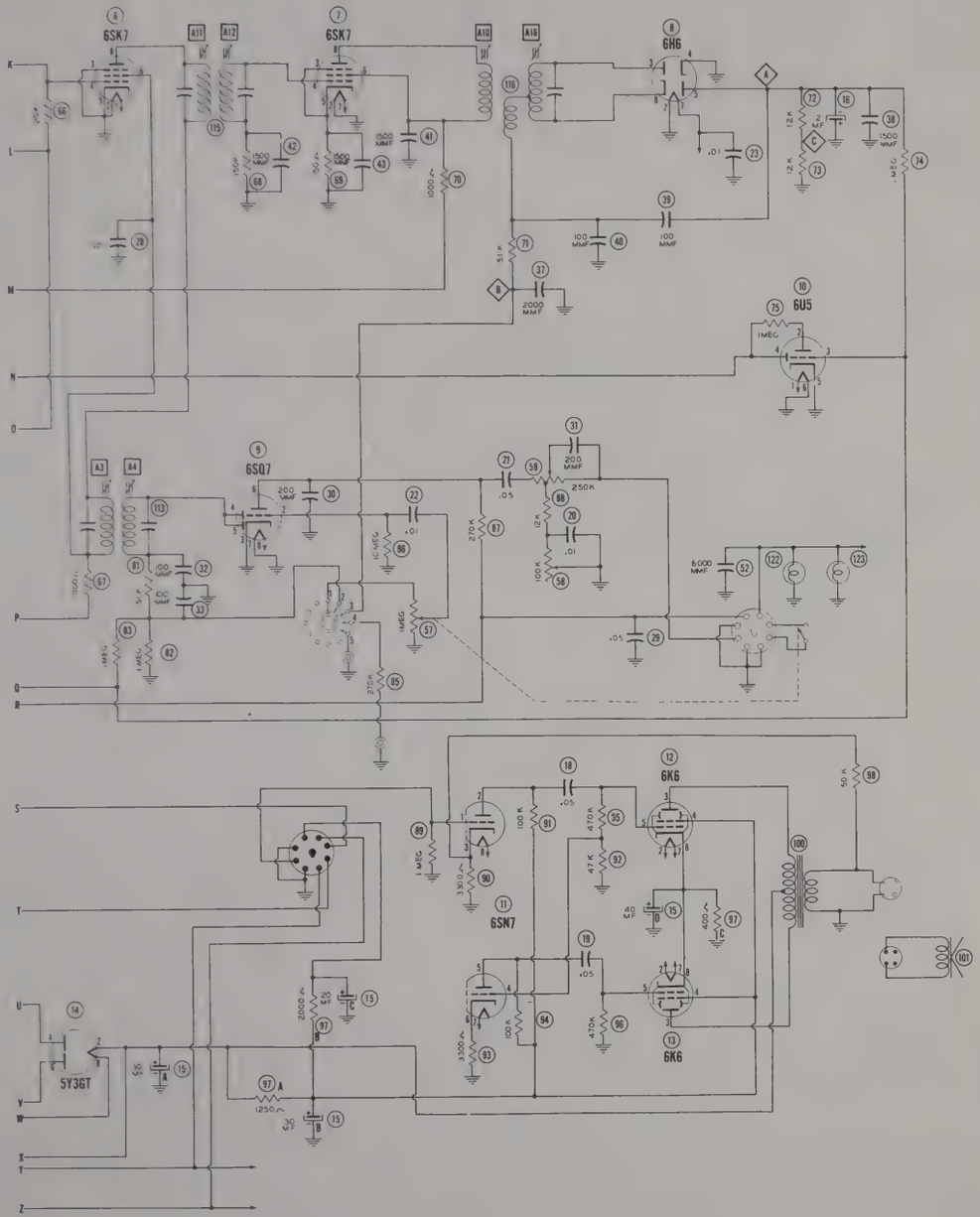

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494-7

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	0V.	.5VDC	0V.	6.6VAC	95VDC	95VDC	.5VDC	-
‡	2	6SB7Y	0V.	6.5VAC	90VDC	90VDC	-6.5VDC§	0V.	0V.	0V.
	3	6SG7	0V.	0V.	0V.	-.4VDC	0V.	115VDC	6.5VAC	45VDC
	4	6SA7	0V.	0V.	128VDC	128VDC	-10VDC§	0V.	6.6VAC	-.6VDC
‡	5	6SK7	0V.	6.6VAC	1.5VDC	0V.	1.5VDC	90VDC	0V.	90VDC
‡	6	6SK7	0V.	0V.	0V.	-5VDC	0V.	97VDC	6.6VAC	97VDC
‡	7	6SK7	0V.	0V.	1.7VDC	0V.	1.7VDC	100VDC	6.6VAC	100VDC
‡	8	6H6	0V.	0V.	.9VDC	0V.	-1VDC	0V.	6.6VAC	-2.8VDC
	9	6SQ7	0V.	-.8VDC	0V.	-.5VDC	-.5VDC	75VDC	0V.	6.6VAC
	10	6U5/6G5	-	-	-	-	-	-	-	-
	11	6SN7GT	0V.	95VDC	4.2VDC	0V.	100VDC	4.4VDC	0V.	6.6VAC
	12	6K6GT	0V.	6.6VAC	305VDC	220VDC	0V.	0V.	0V.	17VDC
	13	6K6GT	0V.	6.6VAC	305VDC	220VDC	0V.	0V.	0V.	17VDC
	14	5Y3GT	0V.	310VDC	0V.	310VAC	0V.	310VAC	310VDC	310VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	0Ω	68Ω	0Ω	.1Ω	35KΩ	35KΩ	68Ω	-
‡	2	6SB7Y	0Ω	.1Ω	35KΩ	35KΩ	20KΩ	0Ω	0Ω	0Ω
	3	6SG7	0Ω	0Ω	0Ω	3 Meg.	0Ω	35KΩ	.1Ω	40KΩ
	4	6SA7	0Ω	0Ω	35KΩ	35KΩ	20KΩ	.8Ω	.1Ω	90KΩ
‡	5	6SK7	0Ω	.1Ω	150Ω	150KΩ	150Ω	35KΩ	0Ω	35KΩ
‡	6	6SK7	0Ω	0Ω	0Ω	750KΩ	0Ω	35KΩ	.1Ω	35KΩ
‡	7	6SK7	0Ω	0Ω	150Ω	150KΩ	150Ω	35KΩ	.1Ω	35KΩ
‡	8	6H6	0Ω	0Ω	1 Meg.	0Ω	24KΩ	INF.	.1Ω	1 Meg.
	9	6SQ7	0Ω	10 Meg.	0Ω	1 Meg.	1 Meg.	300KΩ	0Ω	.1Ω
	10	6U5/6G5	-	-	-	-	-	-	-	-
	11	6SN7GT	120KΩ	130KΩ	3KΩ	47KΩ	130KΩ	3KΩ	0Ω	.1Ω
	12	6K6GT	INF.	.1Ω	30KΩ	30KΩ	520KΩ	47KΩ	0Ω	400Ω
	13	6K6GT	INF.	.1Ω	30KΩ	30KΩ	470KΩ	0Ω	0Ω	400Ω
	14	5Y3GT	INF.	30KΩ	INF.	125Ω	INF.	119Ω	30KΩ	30KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

STAGE GAIN MEASUREMENTS

RF GRID-CONV.GRID	dX	600KC
CONV. GAIN	45X	IN 600KC
		OUT 455KC
IN IF TRANS.	.6X	455KC
IF TUBE	250X	455KC
OUT IF TRANS.	.6X	455KC
AUDIO	35X	400
"	dX	400
OUTPUT	12X	400

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 4 (grid) of 6SK7 AM RF Tube (3). Low side to chassis.	455KC	AM (counter clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	.05 MFD	"	"	"	"	"	A5	Adjust for minimum output.
3	.05 MFD	"	1500KC	"	1500KC	"	A6	Adjust for maximum output.
4	.05 MFD	"	600KC	"	600KC	"	A7	Adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made.
5		Loop	"	"	"	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
6		"	1500KC	"	Tune for maximum output.	"	A9	Adjust for maximum output. Repeat Steps 5 & 6 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	.01 MFD	High side to Pin 8 (grid) of 6SB7Y. Low side to chassis.	10.7MC (Unmodulated)	FM (Center position)	Tuning cap. fully open.	DC probe to Point (A). Common to chassis	A10,A11 A12,A13 A14,A15	Adjust for maximum deflection.
8	.01 MFD	"	"	"	"	DC probe to Point (B). Common to Point (C).	A16	Use zero center scale VTVM if available and adjust for zero deflection. Continue with FM-RF Alignment in Step 11.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7	.01 MFD	High side to Pin 4 (grid) of 6SK7 2nd IF Tube (6). Low side to chassis.	10.7MC (Freq. Mod.)	FM (Center position)	Tuning cap. fully open.	Vertical input to Point (A). Ground to chassis.	A10, A12, A11	Disconnect 2 MFD cap. (16) from Point (A). Adjust A10, A12 & A11 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
8	.01 MFD	High side to Pin 4 (grid) of 6SK7 1st IF Tube (5). Low side to chassis.	"	"	"	"	A14, A13	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
9	.01 MFD	High side to Pin 8 (grid) of 6SB7Y. Low side to chassis.	"	"	"	"	A15	Adjust for maximum amplitude, symmetry and coincidence of pattern per Figure 1. Reconnect 2 MFD Cap.
10	.01 MFD	High side to Pin 4 (grid) of 6SK7 2nd IF Tube (6). Low side to chassis.	"	"	"	Vertical input to Point (B). Ground to chassis.	A16	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per Fig. 2. Continue with FM-RF Alignment in Step 11.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11	Direct	High side to Pin 3 of FM Dipole socket. Low side to chassis.	108MC (Unmodulated)	FM	108MC	DC probe to Point (A). Common to chassis	A17	Adjust for maximum deflection.
12	Direct	"	88MC	"	88MC	"	FM Osc. Coil (110)	Compress or expand osc. coil slightly for maximum deflection.
13	Direct	"	103MC	"	Tune for maximum deflection.	"	A18, A19	Rock tuning cap. and adjust for maximum deflection.

FIG. 1

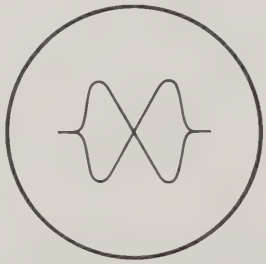

FIG. 2

CO-OP MODELS 6AWC2, 6AWC3, 6A47WCR, 6A47WT, 6A47WTR

CO-OP MODEL 6A47WT

TRADE NAME	Co-op, Models 6AWC2, 6AWC3, 6A47WCR, 6A47WT, 6A47WTR
SUPPLIER	National Cooperatives Inc., 343 S. Dearborn, Chicago, Ill.
TYPE SET	AC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6SG7 RF Amp., 6SA7 Converter, 6SF7 IF-Det.-AVC, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .62 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC — SHORT WAVE 9 - 15.6MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Before attempting alignment, check accuracy of dial calibration against known broadcast stations or a signal generator. If satisfactory, steps 2 & 3 below may be omitted.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	BC (Counter-clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output
2	.1 MFD.	"	1000KC	"	1000KC	"	A5	" " " "
3	.1 MFD.	"	12MC	SW (Clock-wise)	12MC	"	A6	Adjust for maximum output. Tune sig. gen. to 12.9MC. If signal is not heard, retune sig. gen. to 12MC and open A6 to next peak. Adjust for maximum output and recheck for image
4	200MMFD	High side to right hand ext. ant. terminal. Low side to chassis.	600KC	BC	Tune for maximum output.	"	A7	Adjust for maximum output.
5	200MMFD	"	1500KC	"	"	"	A8,A9	" " " "
6		Loop	600KC	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum.
7	600Ω carbon res.	High side to center ext. ant. terminal. Low side to chassis.	15MC	SW	"	"	A10, A11	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CO-OP PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Converter	6SA7	6SA7	8R	
3	IF-Det.-AVC	6SF7	6SF7	7AZ	
4	AF Amp.	6SJ7	6SJ7	8N	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CO-OP PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	450		AF88J4A	UP4445C	DY-403	EL-330	■ Filter
B	30	450						◓ "
C	20	450		PRS450/20	BR2045		UT-20	▲ "
D	20	25						Cathode Bypass
8	.002	600		684-002	DT6D2	ST-6-002	TC-22	Tone Compensation
9	.02	400		484-02	DT4S2	ST-4-02	TC-12	Audio Coupling
10	.01	400		484-01	DT4S1	ST-4-01	TC-11	Tone Compensation
11	.1	400		484-.1	DT4P1	ST-4-1	TC-1	AF Screen Bypass
12	.025	400		484-025	DT4S25	ST-4-02	TC-12	AF Plate Decoupling
13	.04	200		484-04	DT4S4	ST-6-04	TC-14	Tone Compensation
14	.005	400		484-005	DT6D5	ST-6-005	TC-25	Audio Coupling
15	.01	400		484-01	DT4S1	ST-4-01	TC-11	IF Plate Decoupling
16	.01	400		484-01	DT4S1	ST-4-01	TC-11	IF Screen Bypass
17	.04	200		484-04	DT4S4	ST-6-04	TC-14	AVC Filter
18	.01	400		484-01	DT4S1	ST-4-01	TC-11	BC Osc. Feedback
19	.0015	400		1467-0015	1W5D15	MW.5-215	1FM-215	Fixed Padder
20	.01	400		484-01	DT4S1	ST-4-01	TC-11	RF Screen Bypass
21	.005	400		484-005	DT6D5	ST-6-005	TC-25	Conv. Grid Filter
22	330	300		1468-00035	5W5T3	MO.5-33	1FM-335	AF Plate Bypass -Cer.
23	200	300		1468-0002	5W5T2	MO.5-32	1FM-32	Tone Comp. "
24A	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
B	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
25	4.7	300						IF Feedback "
26	22	300		1468-000025	5W5Q2	MO.5-425	MS-42	SW Osc. Feedback "
27	47	300		1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap. " "
28	130	300						Fixed Trimmer " "
29	4.7	300						" " " "
30	470	300						Fixed Padder "
31	25	300		1468-000025	5W5Q25	MO.5-425	MS-425	RF Coupling " "
32	470	300						Fixed Padder "
33	200	300		1468-0002	5W5T2	MO.5-32	1FM-32	Ext. Ant. Coup. "

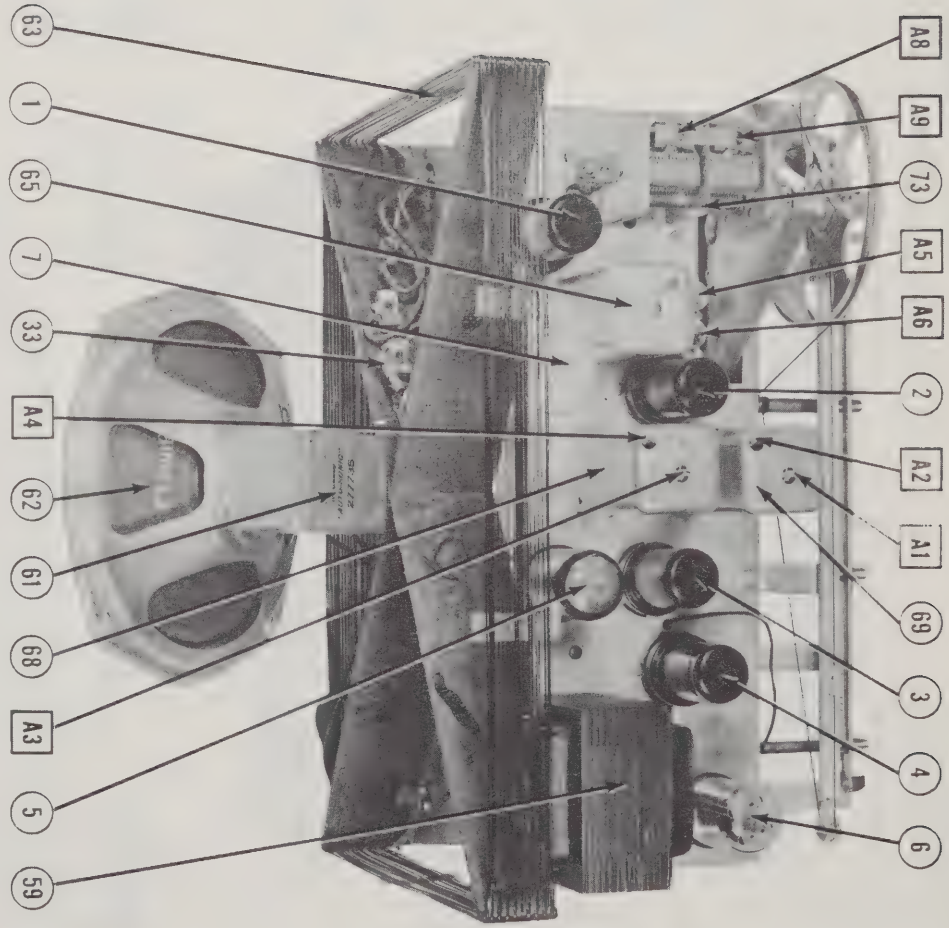
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CO-OP PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
34A	500KΩ	½	PHX100A	D13-133X	AT-78	Volume Control tapped @ 100KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 34A per instructions
C	Switch		" "	41	SW-A	" " " " "
35	4 Meg.	½	PHX101			Tone Control & Phono-Radio-Sw.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CO-OP PART No.	IRC PART No.	IDENTIFICATION CODES
36	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. RF Grid
37	27KΩ	½		BTS-27K	Red-Vi.-Or. RF Screen
38	3900Ω	½		BTS-3900	Or.-White-Red RF Plate Decoupling
39	10KΩ	½		BTS-10K	Br.-Blk.-Or. Conv. Grid
40	18KΩ	½		BT-2-18K	Br.-Gray-Or. Conv. Screen
41	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Osc. Grid
42	39KΩ	½		BTS-39K	Or.-White-Or. IF Screen
43	3900Ω	½		BTS-3900	Or.-White-Red IF Plate Decoupling
44	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
45	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

46	15KΩ	‡		BTS-15K	Br.-Grn.-Or. Tone Compensation
47	10 Meg.	‡		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
48	470KΩ	‡		BTS-470K	Yl.-Vi.-Yl. AF Screen
49	33KΩ	‡		BTS-33K	Or.-Or.-Or. AF Plate Load
50	82KΩ	‡		BTS-82K	Gray-Red-Or. AF Plate Decoup.
51	470KΩ	‡		BTS-470K	Yl.-Vi.-Yl. Output Grid
52	330Ω	1		BW-1-330	Or.-Or.-Br. Output Cathode
53	10KΩ	‡		BTS-10K	Br.-Blk.-Or. Tone Compensation
54	4700Ω	2		BT-2-4700	Yl.-Vi.-Red Filter
55	240Ω	2		BW-2-240	Red-Yl.-Br. "
56	240Ω	2		BW-2-240	Red-Yl.-Br. "
57	68KΩ	2		BTS-68K	Blue-Gray-Or. Bleeder
58	2.2Ω	‡		BW-‡-2.2	Red-Red-Gold Series Dial Light

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CO-OP PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
59	117V AC @ .62A	690V CT .08A DC	5.3V AC @ 2.0A	6.8V AC @ 2.1A	TRX101	P-4079†	T22R31†	P-3152†

†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CO-OP PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
60	5400Ω	3.0Ω	158Ω	.4Ω	TRX102	A-3823	T22858‡	A-2901	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CO-OP PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-110		
61	PM	3.0Ω	PHX-103	Mod. P6-V	6A21	
	CONE DIA.	VC DIA.				
62	5-13/16"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CO-OP PART No.	MEISSNER PART No.	
63A	Loop Ant.	40Ω	1Ω	CLA107		Model 6A47WT
B	" "			CLA115		Model 6A47WTR
C	" "			CLA116		Models 6AWC2, 6AWC3
64	Ant. Coil-SW	1Ω	0Ω	CLA101		
65A	RF Coil BC	12*	4.7Ω	CLA102		*Resistance of BC & SW Primary Windings
B	" " SW		0Ω			
66	Osc.Coil BC		5Ω	‡		‡Item 66 and 67 are slugged tuned and ganged together. They may be obtained under tuner assembly Part #BRA118.
67	" " SW		0Ω	‡		
68	Input IF	12Ω	12Ω	TRX103	16-5740	
69	Output IF	12Ω	12Ω	TRX104	16-5742	

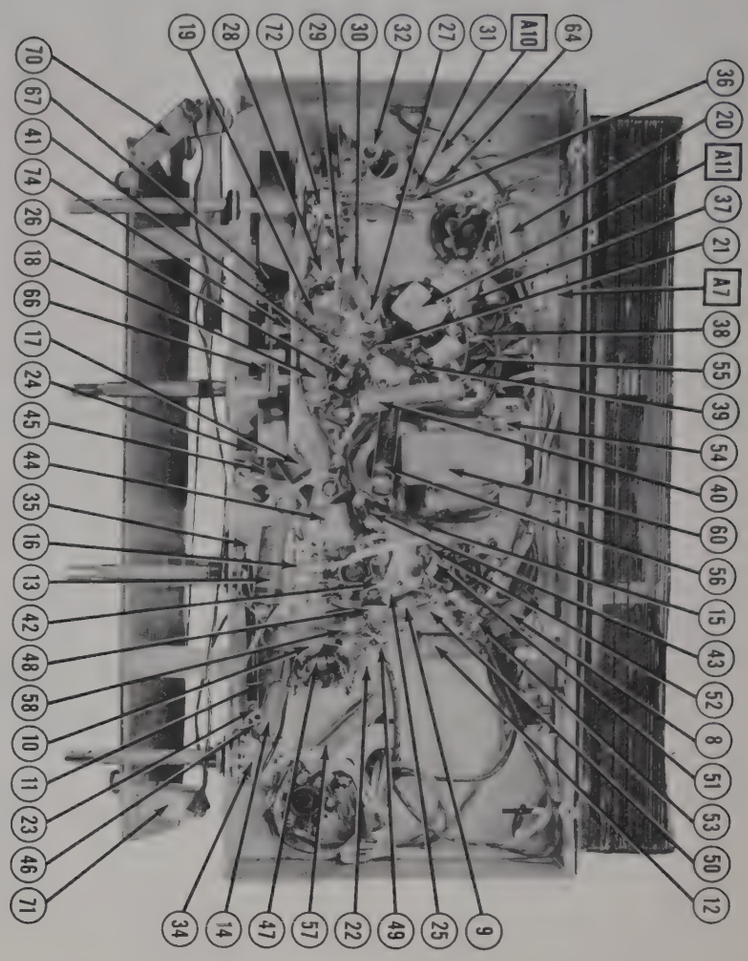
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CO-OP PART No.		
70	Bayonet	6-8	0.25	Blue			Type #44
71	"	6-8	0.25	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	CO-OP PART No.	NOTES
72	Switch	KNX101A	Band
73	2 Gang Var. Cap.		(18-487MMF, 32-495MMF)
74	Tuning Assby.	BRA118	Complete Unit
	Dial Glass	DNX100	

CHASSIS—BOTTOM VIEW



STRINGING THE TUNER

In order to string the tuner, remove tuner assembly from the chassis and remove the dial drum from the condenser shaft with a soldering iron. In doing this, it is important to note the position of the dial drum relative to the condenser plates, in order to reassembly properly.

1. Remove the S. W. coil from the fuse clip brackets.

2. Insert the S. W. core as shown in the diagram, attaching the tuner spring to loop "E", and allowing the spring to lie loose until it is to be stretched around the pulleys and connected to the right hand hook of the B. C. core.

3. Replace the S. W. coil in the fuse clips in the approximate position shown in the diagram.

4. Rotate the gang condenser,to FULL OPEN position (counterclockwise looking from above as in the diagram).

5. Pull the core by means of the cord fastened to the left hand hook, until the left end of the core is exactly 1/4" from the first tooth on the larger radius of the cam (tooth "A" with cam rotated 180° from position shown on the diagram).

6. Proceed with the stringing as shown in the diagram, making sure that the cord is not unduly stretched or left loose between any of the teeth on the cam.

When the stringing has been completed around the cam:

7. Lay the B. C. core, which has been attached to the other end of the cord, on the bracket and remove the BC coil from the clips that hold it.

8. Insert the B. C. core in the coil form and push it through (with a small wire) until the bare hook comes into view at the other end.

9. Replace the B. C. coil in the approximate position shown on the diagram.

10. Recheck the gang--it should be in FULL OPEN position.

11. Grasp the tuner shaft firmly to prevent it from rotating. String the cord loop with the spring attached, from the right end of the S. W. core, around pulley "B" only. Hook the spring to the right hand hook on the B. C. core. (The spring should be barely accessible at the right end of the B. C. coil.)

12. Release the gang condenser (being sure it is still in FULL OPEN position), and stretch the spring around the second pulley "C". Be careful not to damage the spring during this operation.

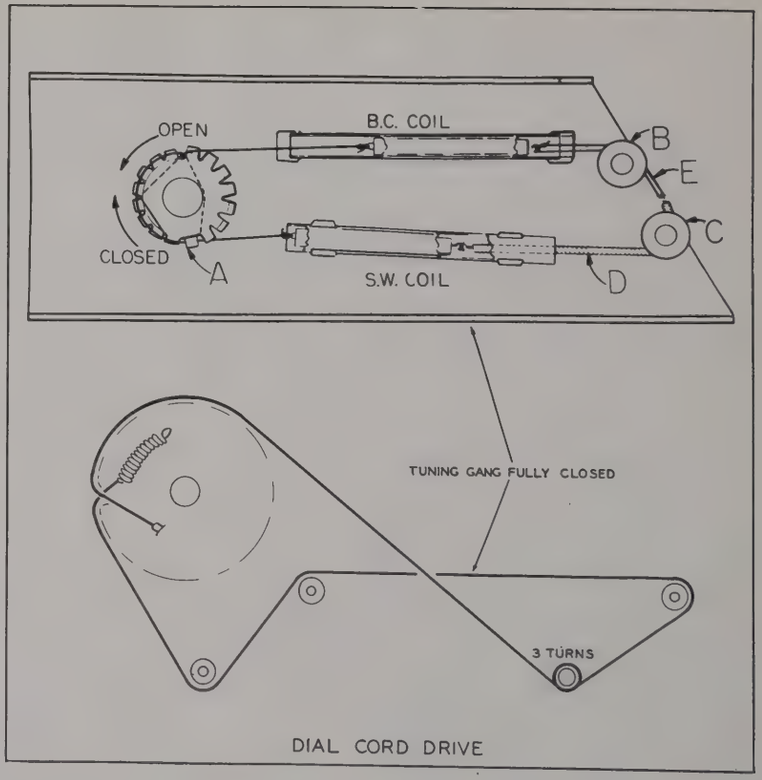
13. Adjust the B. C. coil to its correct position by sliding the coil to a point 1½" from the right-hand end of the B. C. core to the beginning of the coil winding. The tuner is now strung and ready for adjustment of the S. W. coil position:

Turn the gang condenser to its FULL CLOSED position. Insert a piece of wire which has been marked 5/8" from one end into the coil form until it hits the S.W. core. The distance from the left end of the coil form to the left end of the core should be 5/8". If this measure is not within 1/32", there has been some error made during the stringing procedure or the parts are defective. Carefully review the steps taken.

If the final measure was within the tolerance, the tuner is properly strung and ready to be replaced on the chassis base. Solder the dial drum back on, making sure that you replace it in the same position with respect to the gang plates as it originally was.

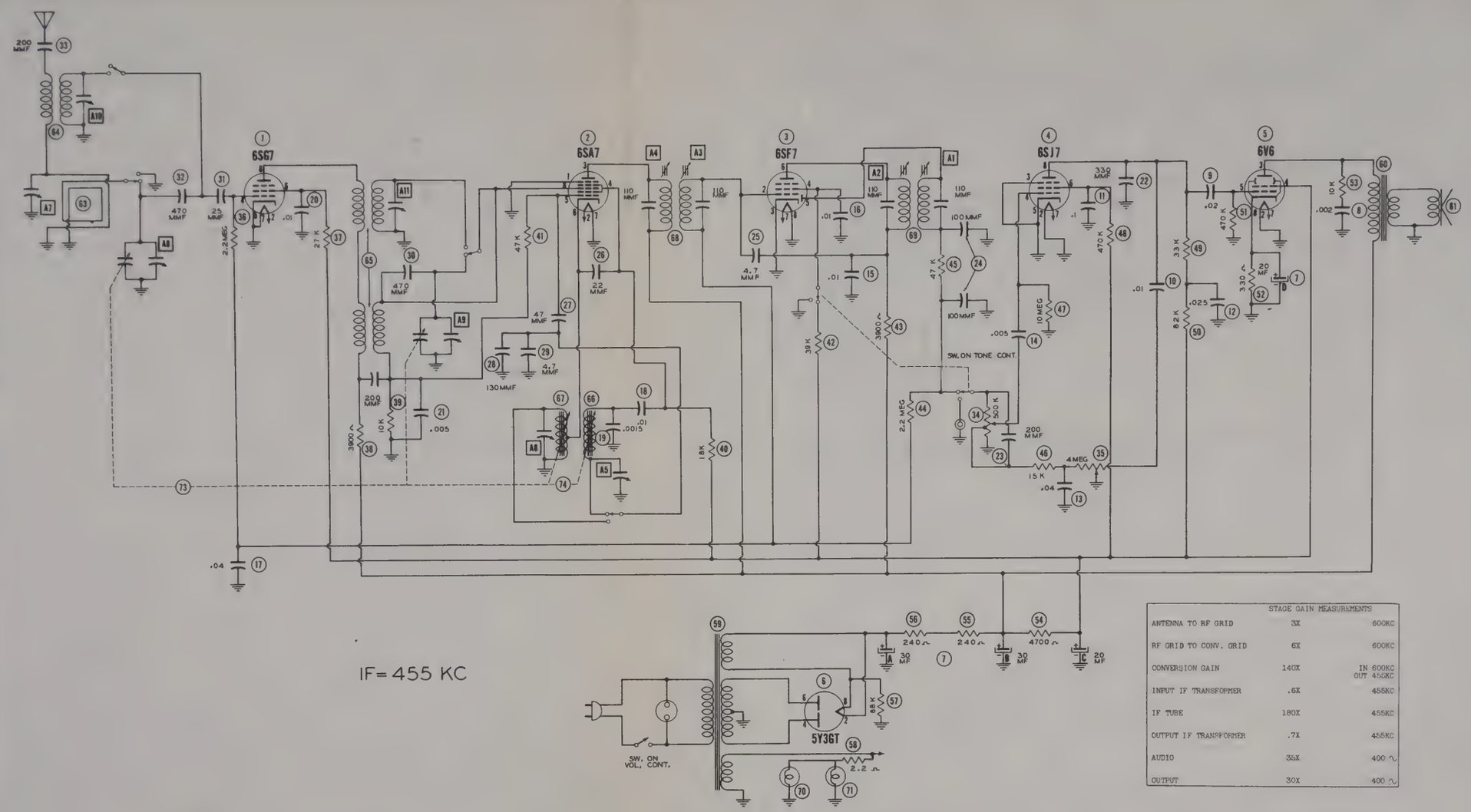
WARNING: When removing the B. C. and S.W. coils from the fuse clips, be careful not to break the fine wires or loosen any soldered connections.

NOTE: The S. W. core is distinguished from the B. C. core in that the S. W. core has a somewhat lighter color and a more satiny surface.



DIAL CORD DRIVE

DATE 2/49-4494-8 SEP #56 - FOLDER #8



STAGE GAIN MEASUREMENTS		
ANTENNA TO RF GRID	3X	600KC
RF GRID TO CONV. GRID	6X	600KC
CONVERSION GAIN	140X	IN 600KC OUT 455KC
INPUT IF TRANSFORMER	.6X	455KC
IF TUBE	180X	455KC
OUTPUT IF TRANSFORMER	.7X	455KC
AUDIO	35X	400 ∿
OUTPUT	30X	400 ∿

VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION. RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	0V.	-.5VDC	0V.	125VDC	6.8VAC	260VDC
2	6SA7GT	0V.	6.8VAC	300VDC	120VDC	-12VDC§	0V.	0V.	-1.3VDC
3	6SF7	0V.	-.4VDC	0V.	100VDC	-.3VDC	260VDC	6.8VAC	0V.
4	6SJ7	0V.	0V.	0V.	-.7VDC	0V.	40VDC	6.8VAC	65VDC
5	6V6GT	0V.	6.8VAC	290VDC	230VDC	0V.	0V.	0V.	12.5VDC
6	5Y3GT	0V.	350VDC	0V.	345VAC	0V.	345VAC	0V.	350VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	0Ω	5 Meg.	0Ω	80KΩ	.1Ω	44KΩ
2	6SA7GT	0Ω	.1Ω	40KΩ	68KΩ	47KΩ	0Ω	0Ω	47KΩ
3	6SF7	0Ω	2.7 Meg.	0Ω	100KΩ	550KΩ	44KΩ	.1Ω	0Ω
4	6SJ7	0Ω	0Ω	0Ω	10 Meg.	0Ω	520KΩ	.1Ω	170KΩ
5	6V6GT	INF.	.1Ω	40KΩ	50KΩ	.70KΩ	INF.	0Ω	330Ω
6	5Y3GT	INF.	40KΩ	INF.	100Ω	INF.	110Ω	INF.	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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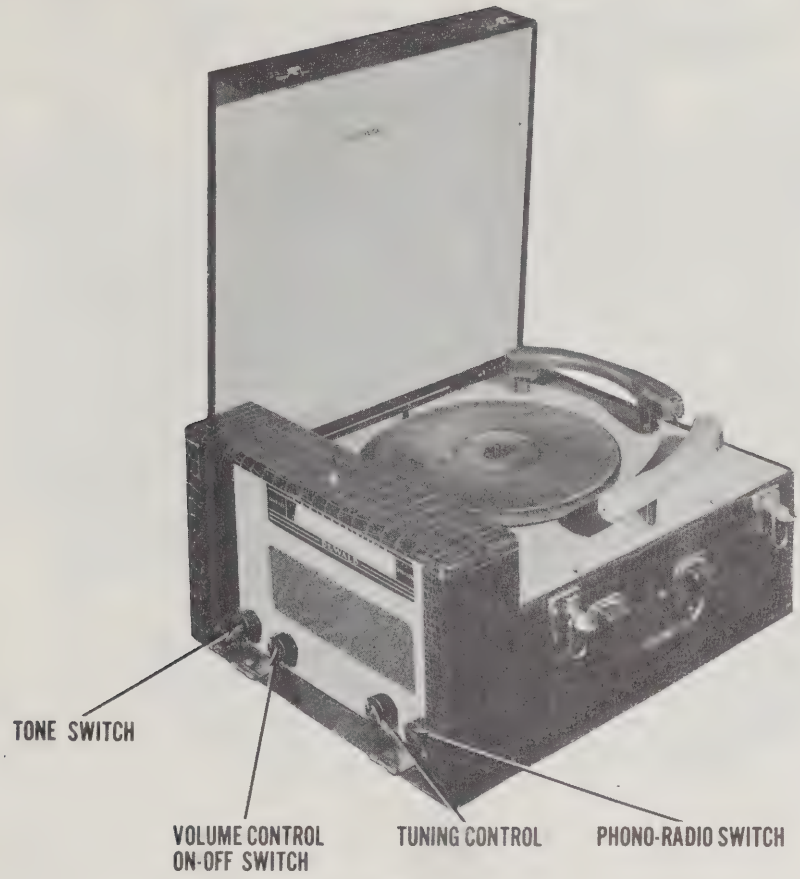
DEWALD
MODEL B-614



DEWALD
MODEL B-614

DEWALD, MODEL B-614

TRADE NAME	Dewald, Model B-614
MANUFACTURER	Dewald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N.Y.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY RATING	105-125 Volts AC .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD cap. in series with low side of signal generator and chassis.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to external ant. terminal. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1, A2 A3, A4	Open A5 completely. Adjust A1 thru A4 for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD to reduce hum modulation.
2.	.1MFD	"	455KC	Tuning cap. fully closed.	Across voice coil.	A5	Adjust for minimum output.
3.	.1MFD	"	1700KC	Tuning cap. fully open.	Across voice coil	A6	Adjust for maximum output.
4.	.1MFD	"	1500KC	Tune for maximum output.	Across voice coil	A7	Adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

DEWALD MODEL B-614

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	2005	AF66D	UP3315	DY-2x30-150	EL-230	■ Filter
B	30	150						▲ "
8	.05	400	2000-05	484-05	GT4S5	ST-4-05	TC-15	Line Filter
9	.05	400	2000-05	484-05	GT4S5	ST-4-05	72P1	Phono. Isolation
10	.01	400	2000-01	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
11	.002	600	2000-002	684-002	GT6D2	ST-6-002	TC-22	Tone Comp.
12	.01	400	2000-01	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.01	400	2000-01	484-01	GT4S1	ST-4-01	TC-11	" "
14	.05	400	2000-05	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
15	.05	400	2000-05	484-05	GT4S5	ST-4-05	TC-15	RF Bypass Power Supply
16	.001	600	2000-001	684-001	GT6D1	ST-6-001	TC-21	Phono. Tone Comp.
17	.02	400	2000-02	484-02	GT4S2	ST-4-02	TC-12	Ext. Ant. Isolation
18	220	300	2001-00022	1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass Cer.
19	220	300	2001-00022	1468-0002	5W5T2	MO.5-32	1FM-32	Diode RF Filter Cer.
20	100	500	2001-0001	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	3002	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 21A per instructions.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

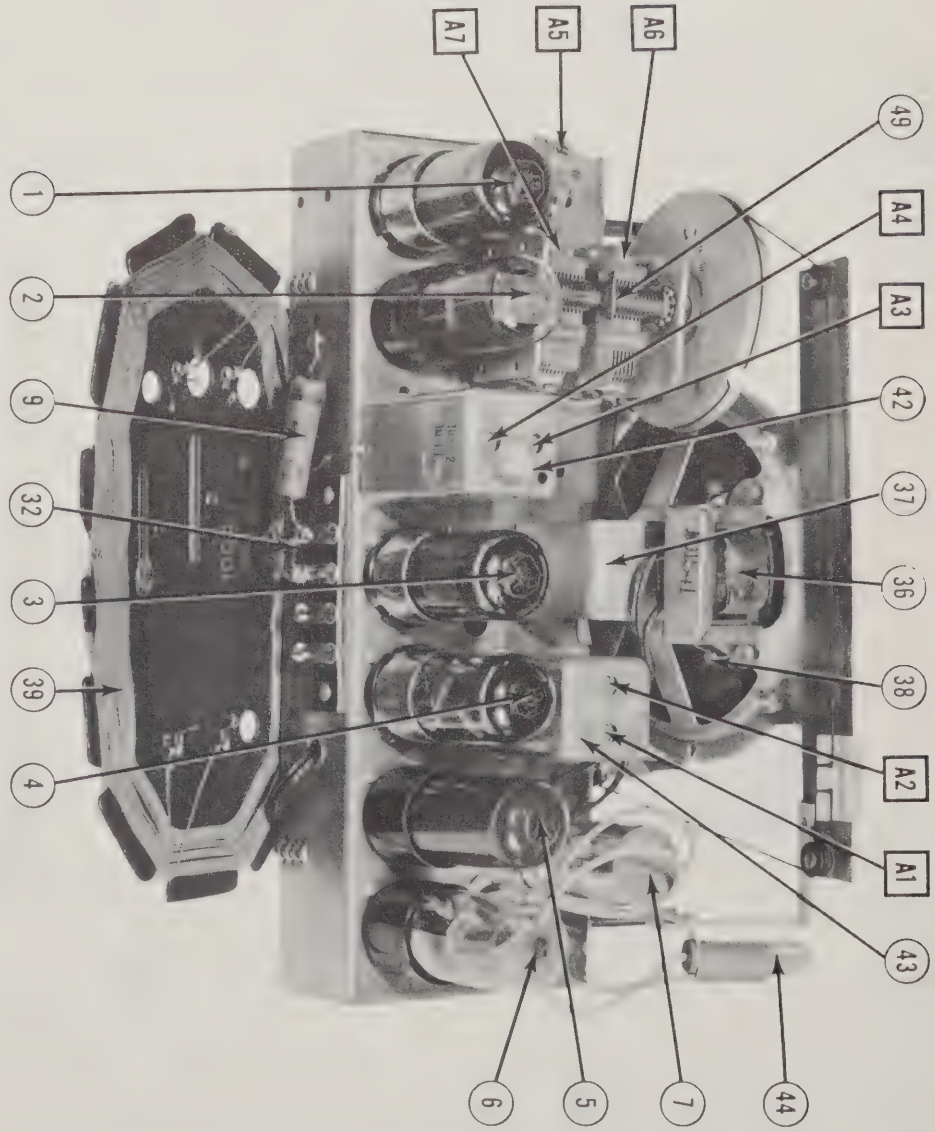
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
22	6800Ω	½		BTS-6800	Blue-Gray-Red RF Plate
23	22KΩ	½		BTS-22K	Red-Red-Or. Converter Grid
24	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
25	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
27	470K	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
28	470K	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
29	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
30	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter
31	15Ω	½			Br.-Grn.-Blk. Rectifier Ballast
32	220KΩ	½		BTS-220K	Red-Red-Yl. Phono. Shunt
33	220KΩ	½		BTS-220K	Red-Red-Yl. Phono. Tone Comp.
34	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " "
35	220Ω	½		BTS-220	Red-Red-Br. IF Cathode See Note

Note: Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
36	2500Ω	3.7Ω	230Ω	.8Ω	Part of 7001	A-3876	T22S45	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: DEWALD PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†	5A15†	† Drill and tap magnet frame
37	PM	3.7Ω	7001	Mod.P5-V		
	CONE DIA.	VC DIA.				
38	4 5/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: MEISSNER PART No.	
39	Loop Ant.	.1Ω	1.3Ω	1004		
40	Wave Trap		41Ω	1005		
41	Osc. Coil		4Ω	1006	*14-1060	* Add 50 MMF Cap. from high side of tuning cap. to osc. grid.
42	Input IF	18.5Ω	18.5Ω	1000	16-6658	
43	Output IF	29Ω	29Ω	1002	16-6660	

DIAL LIGHT

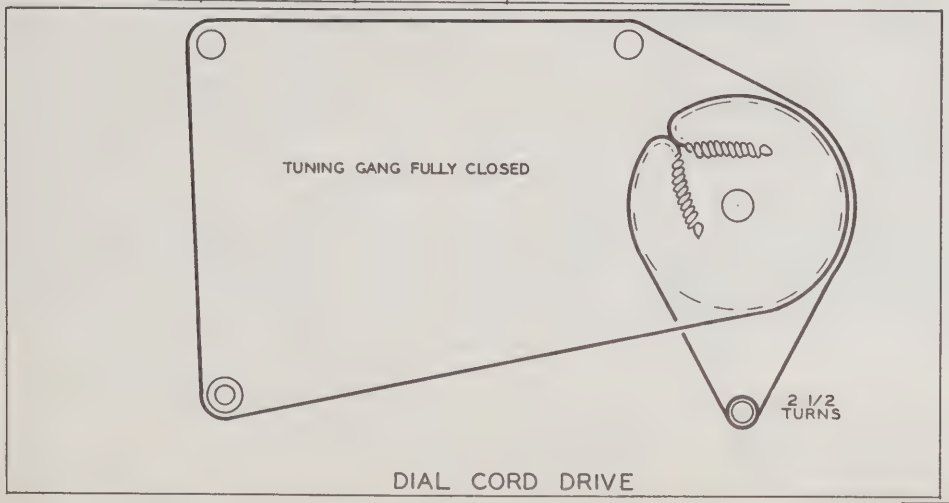
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA	INSTALLATION NOTES
44	Bayonet	6-8 V.	0.15 A.	Brown			Type 47

PHONO ARM AND CARTRIDGE

ITEM No.	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
45A	8042	L-92-33	Cartridge (long playing)
B		507-L92-33	Arm & cartridge (long playing)
46	8009	LT3MA	Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
47	Switch	8003	Tone
48	"	8004	Radio-Phono
49	2 Gang Var. Cap.	2003	(20-456MMF, 29-188MMF)
	Dial Scale	6002	
	Knob	4017	

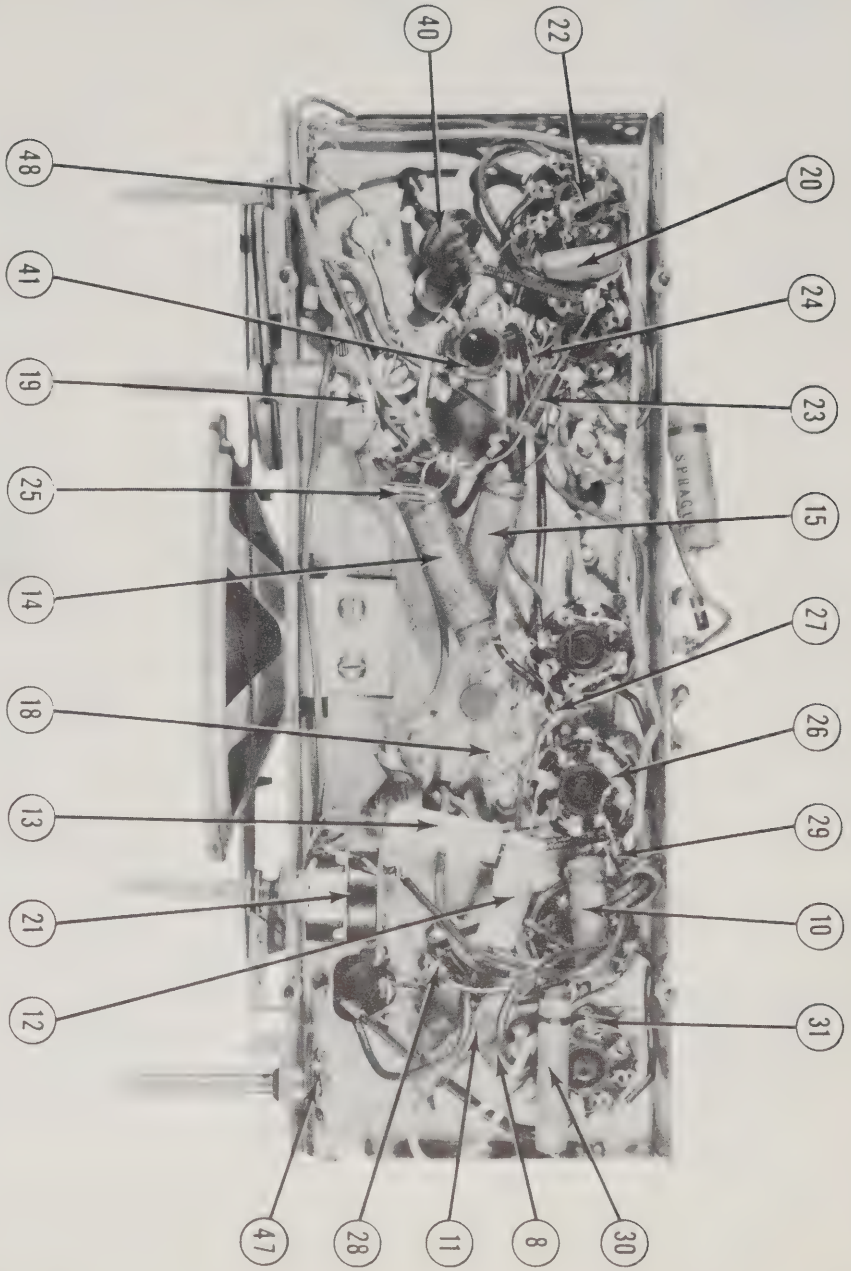


DIAL CORD DRIVE

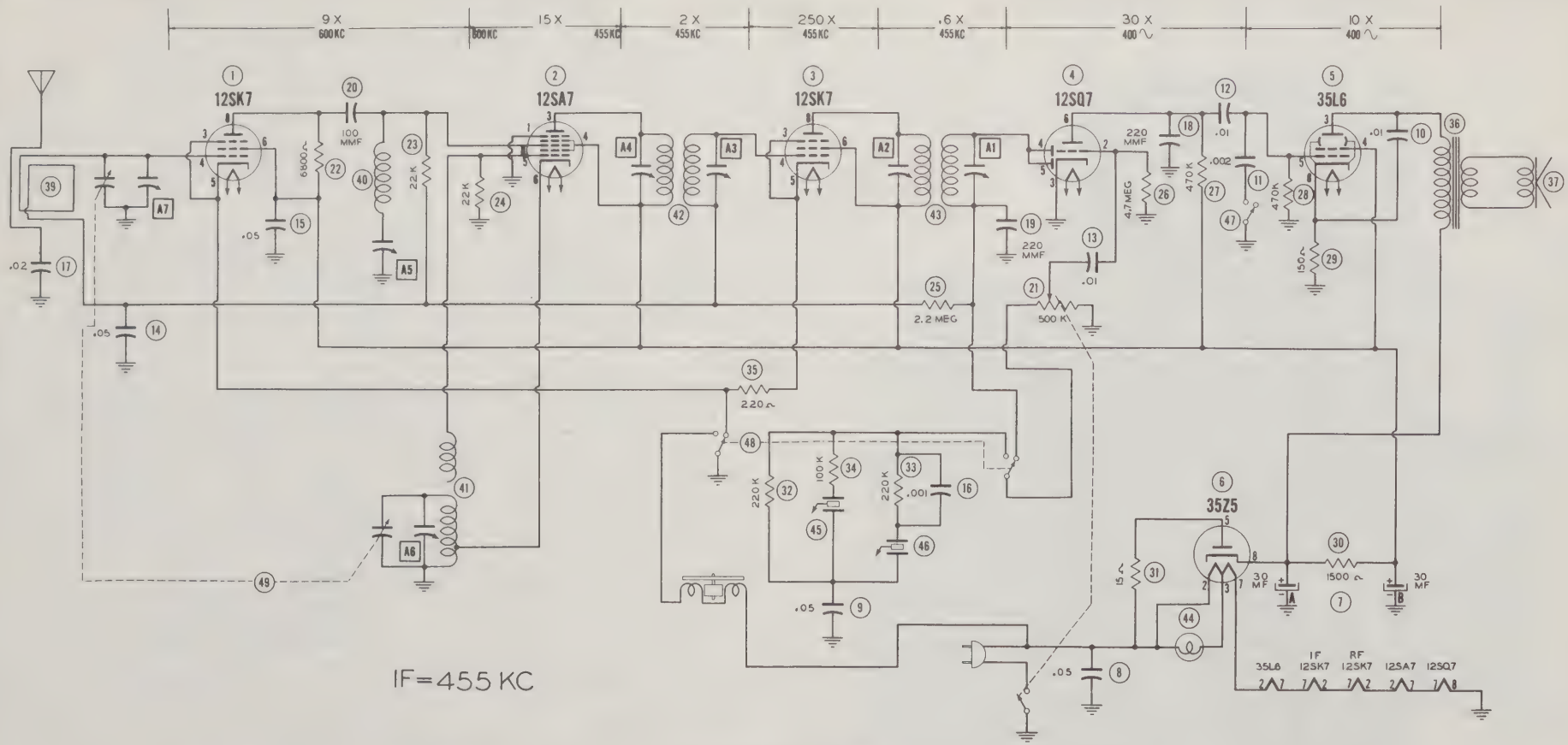
DATE 2/49-4494-9 SET #56 FOLDER #9

DEWALD MODEL B-614

CHASSIS—BOTTOM VIEW



DEWALD MODEL B-614



VOLTAGE READINGS — RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	27VAC	0V.	-.4VDC	0V.	75VDC	41VAC	31VAC
2	12SA7GT	0V.	27VAC	75VDC	75VDC	-8VDC§	0V.	13VAC	-.4VDC
3	12SK7GT	0V.	41VAC	0V.	-.4VDC	0V.	75VDC	50VAC	75VDC
4	12SQ7GT	0V.	-.8VDC	0V.	-.5VDC	-.5VDC	36VDC	13VAC	0V.
5	35L6GT	0V.	85VAC	117VDC	75VDC	0V.	0V.	50VAC	4.9VDC
6	35Z5GT	0V.	117VAC	112VAC	0V.	110VAC	0V.	85VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0Ω	25Ω	0Ω	3 Meg.	0Ω	52KΩ	40Ω	60KΩ
2	12SA7GT	0Ω	25Ω	52KΩ	52KΩ	22KΩ	0Ω	12Ω	3 Meg.
3	12SK7GT	0Ω	40Ω	200Ω	3 Meg.	200Ω	52KΩ	62Ω	52KΩ
4	12SQ7GT	0Ω	4.7 Meg.	0Ω	500KΩ	500KΩ	520KΩ	12Ω	0Ω
5	35L6GT	INF.	85Ω	50KΩ	52KΩ	470KΩ	INF.	52Ω	150Ω
6	35Z5GT	INF.	115Ω	110Ω	INF.	130Ω	INF.	85Ω	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRADE NAME	Emerson, Model 602 (Ch. 120072A, 120082A)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York 11, N.Y.
TYPE SET	AC-DC Operated FM Superheterodyne Receiver
TUBES (SIX)	Types, 12BA7 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 12S8GT Det.-AVC-AF, 35B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—FREQ. MOD.	88-108MC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use insulated alignment screwdriver for all adjustments.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

FM DETECTOR & IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Volume control should be set at maximum volume. Output of signal generator should be no more than necessary to obtain a satisfactory output reading.

Connect two 100KΩ resistors in series between Point Ⓐ and chassis. Resistors should be within ± 5% of each other. The junction of these two resistor is Point Ⓒ.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.003 MFD	High side to Pin 1 (grid) of 12BA6 2nd IF Tube (3). Low side to chassis.	10.7MC (Unmodulated)	Tuning cap. fully open.	DC probe to Point Ⓐ. Common to chassis	A1	Adjust for maximum deflection.
2	.003 MFD	"	"	"	DC probe to Point Ⓑ. Common to Point Ⓒ. See prealignment notes.	A2	Adjust for minimum deflection.
3	.003 MFD	High side to Pin 7 (grid) of 12BA7. Low side to chassis.	"	"	DC probe to Point Ⓐ. Common to chassis.	A3,A4, A5,A6	Adjust for maximum deflection. Continue with RF Alignment in Step 4.

FM DETECTOR & IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.003 MFD.	High side to Pin 1 (grid) of 12BA6 2nd IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	Tuning cap. fully open.	Vertical input to Point Ⓑ. Ground to chassis.	A1,A2	Alternately adjust A1 for maximum amplitude and straightness of diagonal lines and A2 for crossover of diagonal lines occurring at center of pattern per Fig. 2.
2	"	High side to Pin 7 (grid) of 12BA7. Low side to chassis. Disconnect internal antenna.	"	"	Vertical input to Point Ⓐ. Ground to chassis.	A3,A4, A5,A6	Disconnect stabilizing cap. (9). Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Reconnect stabilizing cap. (9). Continue with RF Alignment in Step 4.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4	2 -150Ω carbon res.	Each side in series with 150Ω carbon resistor to ant. terminals "A" and "G".	108MC (Unmodulated)	Tuning cap. fully open.	DC probe to Point Ⓐ. Common to chassis	A7	Adjust for maximum deflection
5	"	"	"	Tune for maximum deflection.	"	A8	" " " "

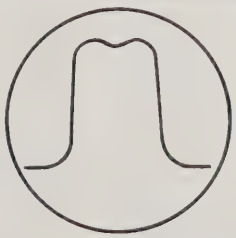


FIG. 1

FIG. 2

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 2/49-494-10 SET #56 FOLDER #10

EMERSON MODELS
602 (Ch. 120072A, 120082A)

EMERSON MODELS
602 (Ch. 120072A, 120082A)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	Converter	12BA7	12BA7		
2	1st IF Amp.	12BA6	12BA6	7BK	
3	2nd IF Amp.	12BA6	12BA6	7BK	
4	Det.-AVC-AF	12S8GT	12S8GT		
5	Power Output	35B5	35B5		
6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

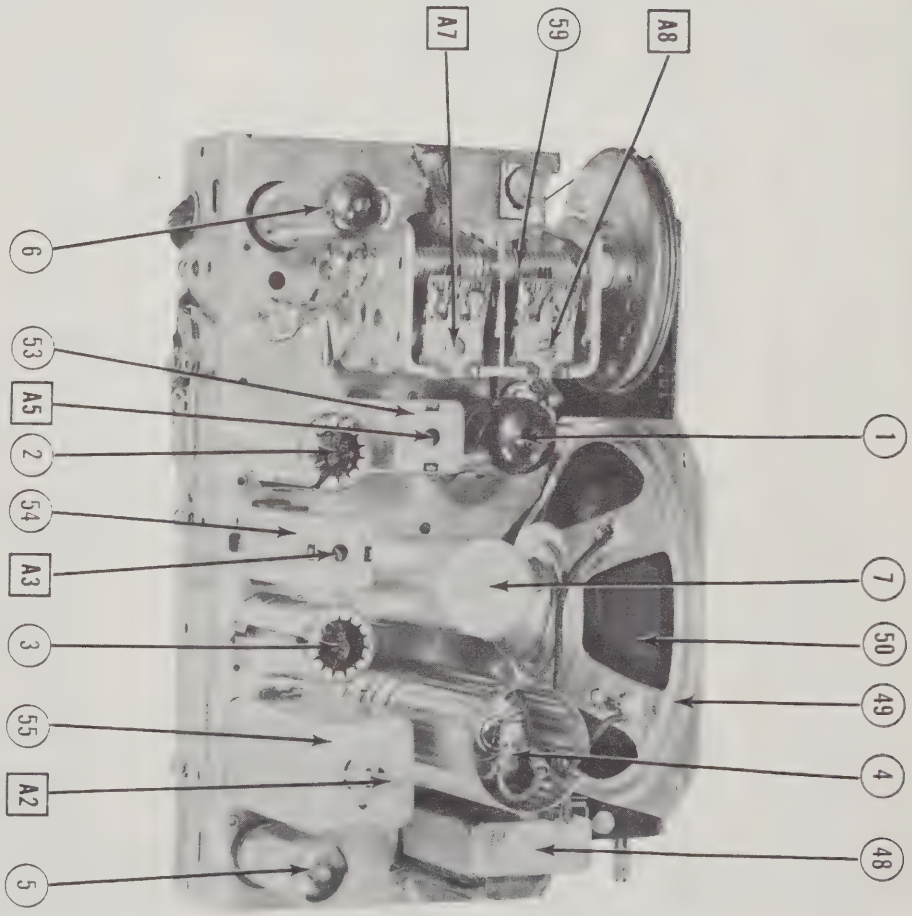
ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
7A	50	150	925118	AF888D	UP44415	DY-3x40-150	EL-340	■ Filter
B	50	150						▲ "
C	50	150						"
8	50	25	925117	PRS25/50	BR502	M-50-25	TA-50	Cathode Bypass
9	5	25	925116	PRS150/4	BR550	M-4-450	TA-5	Stabilizing Cap.
10	.05	200	920030	484-05	GT2S5	ST-4-05	TC-15	Line Filter
11	.02	400	920020	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
12	.01	400	920090	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.002	600	920010	684-002	GT6S2	ST-6-002	TC-22	" "
14	5000	300	928109	1467-005	1D5D5	MW.5-25	1FM-25	Rectifier Bypass -Cer.
15	330	500	910026	1468-00035	5W5T3	MO.5-33	1FM-335	Diode Load Cap.-Note 1
16	330	500	910026	1468-00035	5W5T3	MO.5-33	1FM-335	" " " " "
17	500	300	928004	1468-0005	5W5T5	MO.5-35	1FM-35	AF Plate Bypass -Cer.
18	1000	500	928003	1468-001	1W5D1	MW.5-21	1FM-21	De-emphasis
19A	4700	300	928022	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Decoup. "
B	4700	300		1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Grid Filter "
20A	4700	300	928022	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Decoupling "
B	4700	300		1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter "
21	5000	300	928109	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Decoupling "
22	3	300	928026					Fixed Trimmer-Note 2 "
23	75	300	928015	1469-000075	5W5Q7	MOS.5-47	1FM-475	Osc. Grid Cap. "
24	15	300	928025	1468-00001	5W5Q1	MO.5-41	MS-415	Osc. Feedback "
25	2.2	300	915005					Osc. Coupling "
26	1000	300	928003	1468-001	1W5D1	MW.5-21	1FM-21	Ant. Coupling "
27	1000	300	928003	1468-001	1W5D1	MW.5-21	1FM-21	" " "
28	50	300	928015	1468-00005	5W5Q5	MO.5-45	1FM-45	Filament Bypass "
29	5000	300	928109	1467-005	1D5D5	MW.5-25	1FM-25	" " "
30	5000	300	928109	1467-005	1D5D5	MW.5-25	1FM-25	" " "
31	5000	300	928109	1467-005	1D5D5	MW.5-25	1FM-25	" " "

Note 1-When either Item 15 or 16 are replaced, replace both with capacitors of equal value.
Note 2-Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	
32A	500KΩ	½	390062		15/16-60-Z	Volume Control
B	Switch		Not Req.		SPST Sw.	Attached at factory.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
33	22KΩ	½	340810	BTS-22K	Red-Red-Or. Osc. Grid
34	100Ω	½	340250		Br.-Blk.-Br. Conv. Decoup.
35	2.2 Meg.	½	351290	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
36	100Ω	½	340250		Br.-Blk.-Br. 1st IF Decoupling
37	2.2 Meg.	½	351290	BTS-2.2 Meg.	Red-Red-Grn. 2nd IF Grid
38	100Ω	½	340250		Br.-Blk.-Br. 2nd IF Decoup.
39	68KΩ	½	340930	BTS-68K	Blue-Gray-Or. De-emphasis
40	33KΩ	½	340850	BTS-33K	Or.-Or.-Or. Ratio Det. Diode Load
41	4.7 Meg.	½	351370	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
42	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate
43	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. Output Grid
44	180Ω	½	340310	BW-½-180	Br.-Gray-Br. Output Cathode
45	1000Ω	1	370470	BTA-1000	Br.-Blk.-Red Filter
46	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red "
47	39Ω	1	370150		Or.-White-Blk. Rect. Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC					
48	20000Ω	3.2Ω	180Ω tapped @ 9Ω	.5Ω	734044	A-3330		A-3031	Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
49	PM	3.2Ω	180055			
	CONE DIA.	VC DIA.				
50	4"	9/16"				

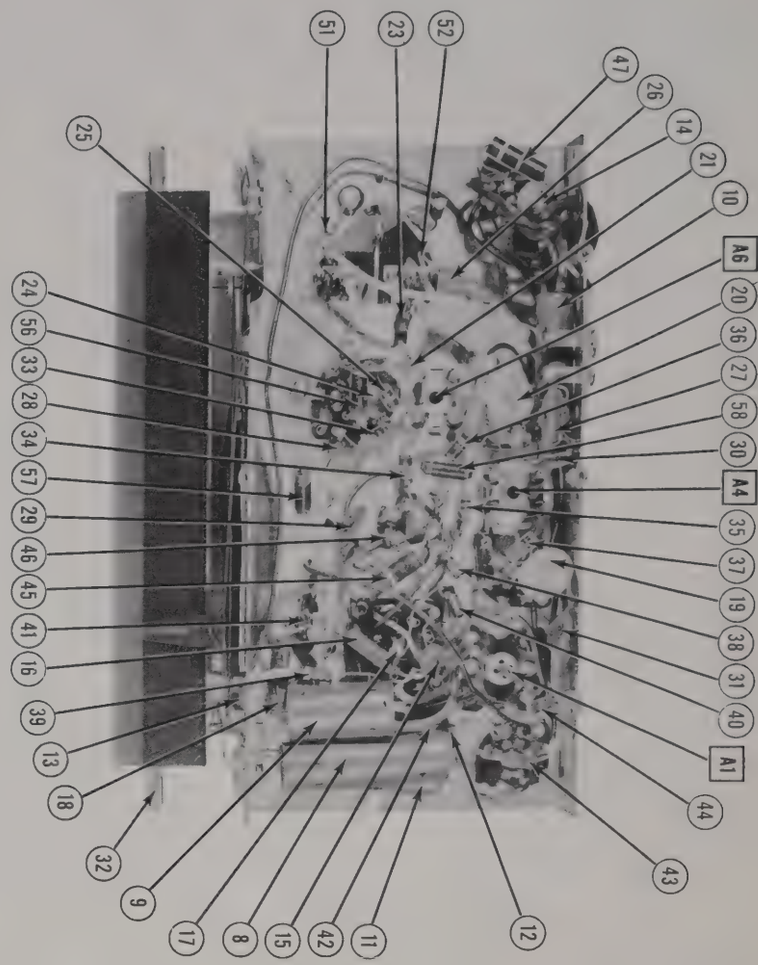
R F COILS

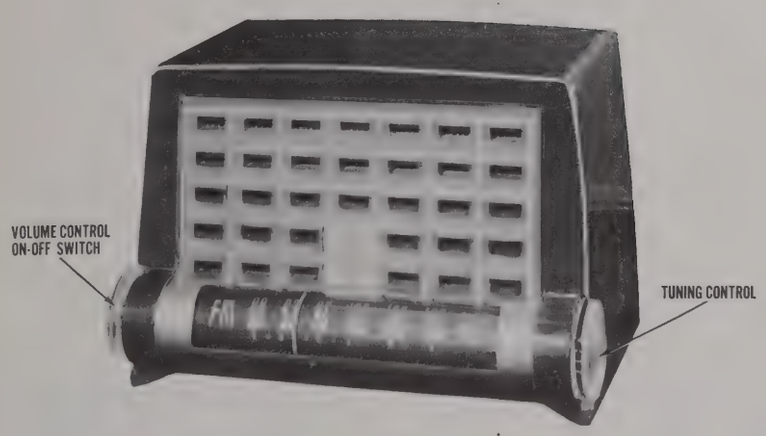
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
51	Ant. Coil		0Ω	710018		
52	Osc. Coil		0Ω	716028		
53	1st IF	1Ω	1Ω	720067		Alternate 720024
54	2nd IF	1Ω	1Ω	720067		Alternate 720024
55	Ratio Det.	1.2Ω	.5Ω	720071		Alternate 720068
56	RF Choke		0Ω	705002		
57	Fil. Choke		0Ω	705002		
58	" "		0Ω	705002		

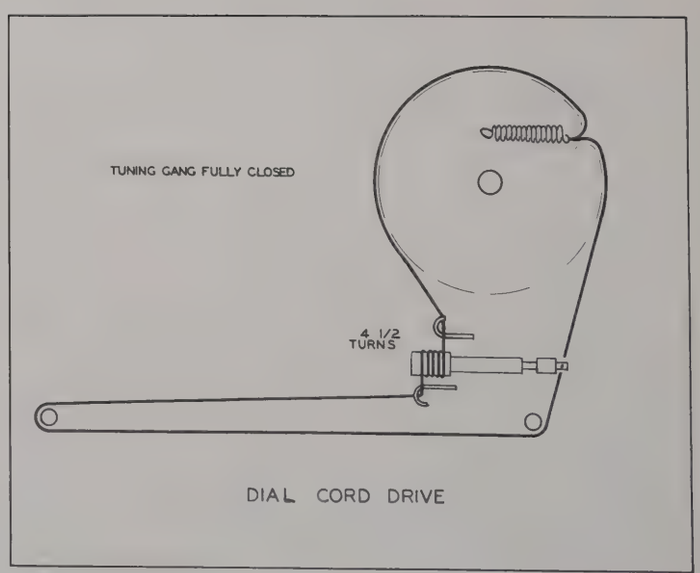
MISCELLANEOUS

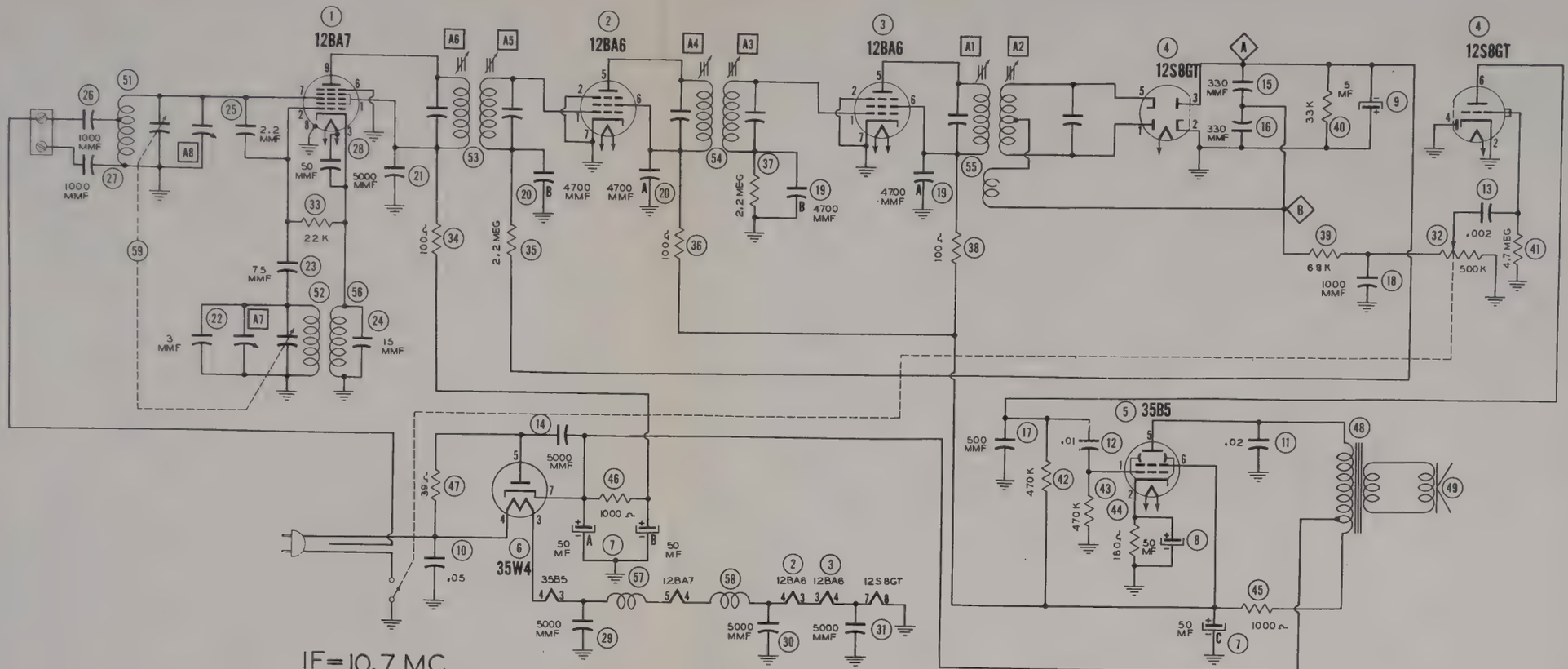
ITEM No.	PART NAME	EMERSON PART No.	NOTES
59	2 Gang Var. Cap.	900041	(22-40MMF, 22-40MMF)
	Cabinet	140168	
	Dial Pointer	525033	(Ch. 120072A)
	" "	525032	(Ch. 120082A)
	Knob	460088	

CHASSIS—BOTTOM VIEW









VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	12BA7	105VDC	-4.2VDC§	0V.	41VAC	50VAC	0V.	0V.	0V.	-
2	12BA6	-.7VDC	0V.	27VAC	41VAC	94VDC	94VDC	0V.	-	-
3	12BA6	-.7VDC	0V.	27VAC	14VAC	94VDC	94VDC	0V.	-	-
4	12S8GT	0V.	0V.	-.4VDC	0V.	-1.6VDC	53VDC	14VAC	0V.	-
5	35B5	0V.	5.4VDC	50VAC	85VAC	115VDC	95VDC	0V.	-	-
6	35W4	0V.	0V.	85VAC	117VAC	113VAC	110VAC	120VDC	-	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	12BA7	81KΩ	22KΩ	0Ω	40Ω	54Ω	0Ω	0Ω	0Ω	81KΩ
2	12BA6	2.2 Meg.	0Ω	27Ω	40Ω	81KΩ	81KΩ	0Ω	-	-
3	12BA6	2.2 Meg.	0Ω	27Ω	14Ω	81KΩ	81KΩ	0Ω	-	-
4	12S8GT	600KΩ	0Ω	33KΩ	0Ω	600KΩ	510KΩ	14Ω	0Ω	-
5	35B5	470KΩ	180Ω	54Ω	85Ω	80KΩ	81KΩ	470KΩ	-	-
6	35W4	0Ω	INF.	85Ω	115Ω	150Ω	110Ω	80KΩ	-	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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GENERAL ELECTRIC
MODEL 150

GENERAL ELECTRIC
MODEL 150

GENERAL ELECTRIC MODEL 150

TRADE NAME	General Electric, Model 150
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply. .17 Amp. @ 117 Volts AC or 52 MA @ 9 Volts DC and 14.5 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning capacitor fully closed and with set viewed as mounted in cabinet, set pointer 1¾" from left edge of dial back plate. This is the calibration mark referred to in steps below.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (Grid) of 1T4 IF tube (3). Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil	A1, A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200 MMF to reduce hum modulation.
2.	.05MFD	High side to pin 6 (Grid) of 1R5. Low side to B-.	455KC	"	"	A3, A4	Adjust for maximum output. Repeat steps 1 & 2 until no further improvement can be made.
3.		Loop	1500KC	3¼" from calibration mark	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	1500KC	Tune for maximum output.	"	A6	Install receiver in cabinet with back closed. Remove plug button on side of cabinet and adjust A6 for maximum output.

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DATE 2/49-#494-11 SET #56 FOLDER #11

PARTS LIST AND DESCRIPTIONS

GENERAL ELECTRIC
MODEL 150

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1T4	1T4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1T4	1T4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Gen. Elec. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	RCE-069	AF88D	UP4415	DY-2X40-150	D6568	▲ Filter
B	40	150						■ "
C	200	12		PRS12/250	BRH1225	M-250-15		Filament Bypass
7	100	6	UCE-067	PRS25/100	BRH601	M-100-12	UHC-106	" "
8	.03	600	UCC-633	684-03	GT6S3	ST-6-03	TC-13	Line Filter
9	.05	600	UCC-635	684-05	GT6S5	ST-6-05	72P1	Line Isolation
10	.003	400	UCC-623	484-003	GT6D3	ST-6-003	TC-23	Output Plate Bypass
11	.005	400	UCC-625	484-005	GT6D5	ST-6-005	TC-25	AF Screen Bypass
12	.05	200	UCC-635	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
13	.05	200	UCC-635	484-05	GT2S5	ST-4-05	TC-15	RF Byp. Power Supply
14	.02	200	UCC-631	484-02	GT2S2	ST-4-02	TC-12	Screen Decoupling
15	.05	200	UCC-635	484-05	GT2S5	ST-4-05	TC-15	Filament Bypass
16A	5000	300	*	484-.005	GT6D5	ST-6-005	TC-25	Audio Coupling Cer.
B	220	300		1468-.00025	SW5T25	MO.5-325	1FM-325	AF Plate Bypass
C	2000	300		484-.002	GT6D2	ST-6-002	TC-22	Audio Coupling
D	220	300		1468-00025	SW5T25	MO.5-325	1FM-325	Diode RF Filter
17	47	300	RCW-1073	1468-.00005	SWSQ5	MO.5-45	1FM-45	Osc. Grid Cap. Cer.
18	100	300	RCW-1074	1468-0001	SW5T1	MO.5-31	1FM-31	RF Coupling "
19	330	300	RCW-177	1468-.00035	SW5T3	MO.5-33	1FM-335	" " "

* Items 16A,B,C,D are combined into one unit obtainable under manufacturers part no. RW3013.

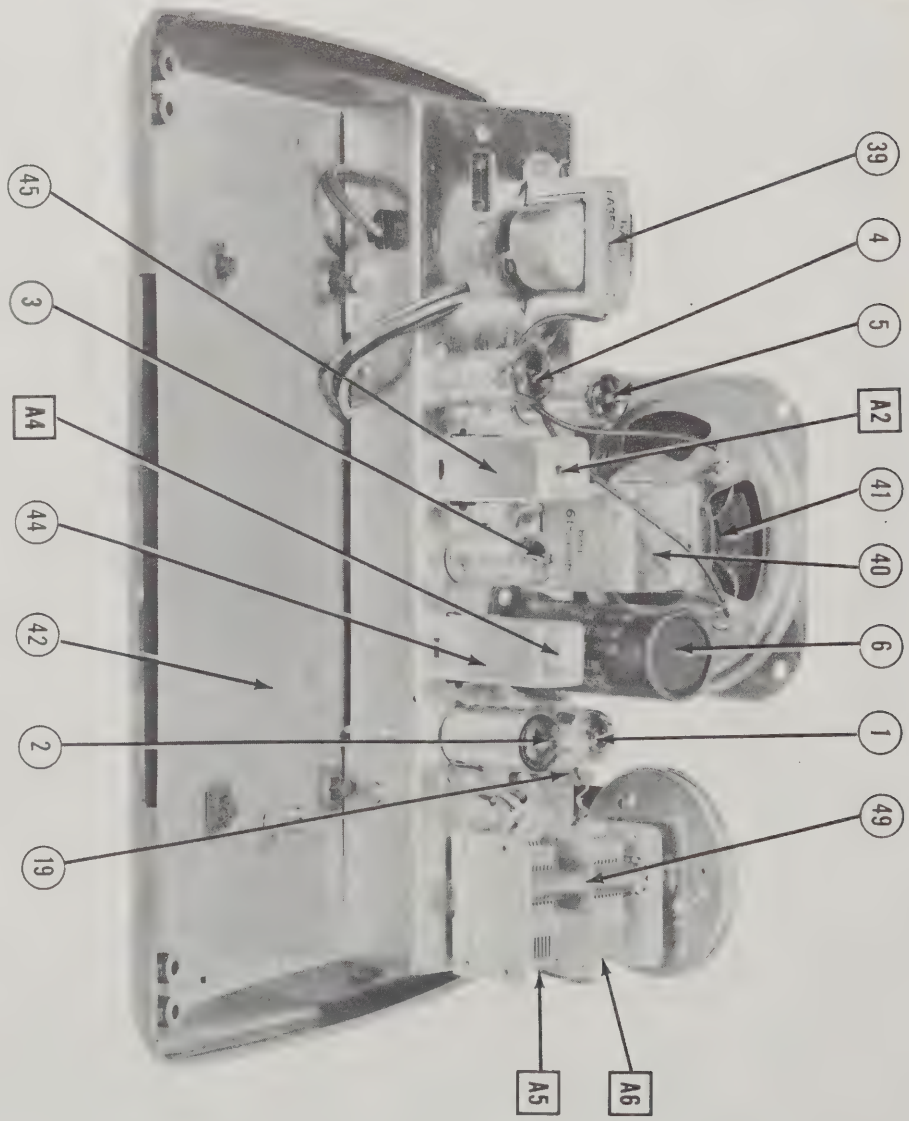
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	½	RRC-083	D13-133	AM-60-Z	Volume Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 20A per instructions.
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	IDENTIFICATION CODES
21	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. - RF Grid
22	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. RF Plate Load
23	10KΩ	½	URD-073	BTS-10K	Br.-Blk.-Or. Converter Grid
24	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Osc. Grid
25	5600Ω	½	URD-067	BTS-5600	Grn.-Blue-Red Screen Decoupling
26	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
27	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	4.7 Meg	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
29	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen
30	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
31	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
32	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. Filament String
33	1500Ω	½	URD-053	BTS-1500	Br.-Grn.-Red Filament String
34	1500Ω	½	URD-053	BTS-1500	Br.-Grn.-Red Filament String
35	2300Ω	10	RRW-027	AB-2250	Filament Dropping
36	2700Ω	1	URE-059	BTA 2700	Red-Vi.-Red Filter
37	22Ω	½	URD-009		Red-Red-Blk. Surge Limiter
38	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		General Electric PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	9500Ω	3.6Ω	415Ω	.34Ω	RTO-050	A-3848#	T22S47#	A-2932#	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			General Electric PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
40	PM	3.6Ω	VOP-488	ST-113† MOD.P4-X	4A07†	† Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
41	4"	9/16"				

R F COILS

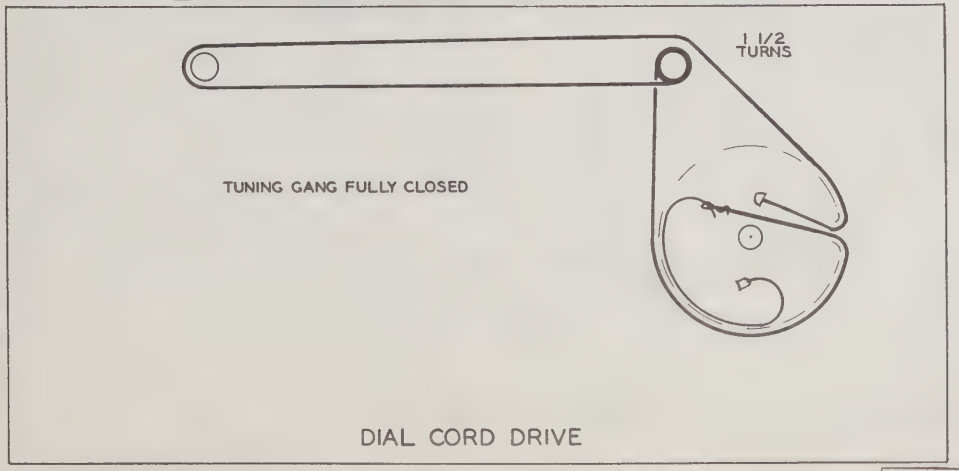
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.
42	Loop Ant.		2.5Ω	RLL-029	
43	Osc. Coil	2.8Ω	7.5Ω	RLC-068	14-1060
44	Input IF	19Ω	19Ω	RTL-052	16-6668
45	Output IF	14Ω	17Ω	RTL-079	16-6669

BATTERIES

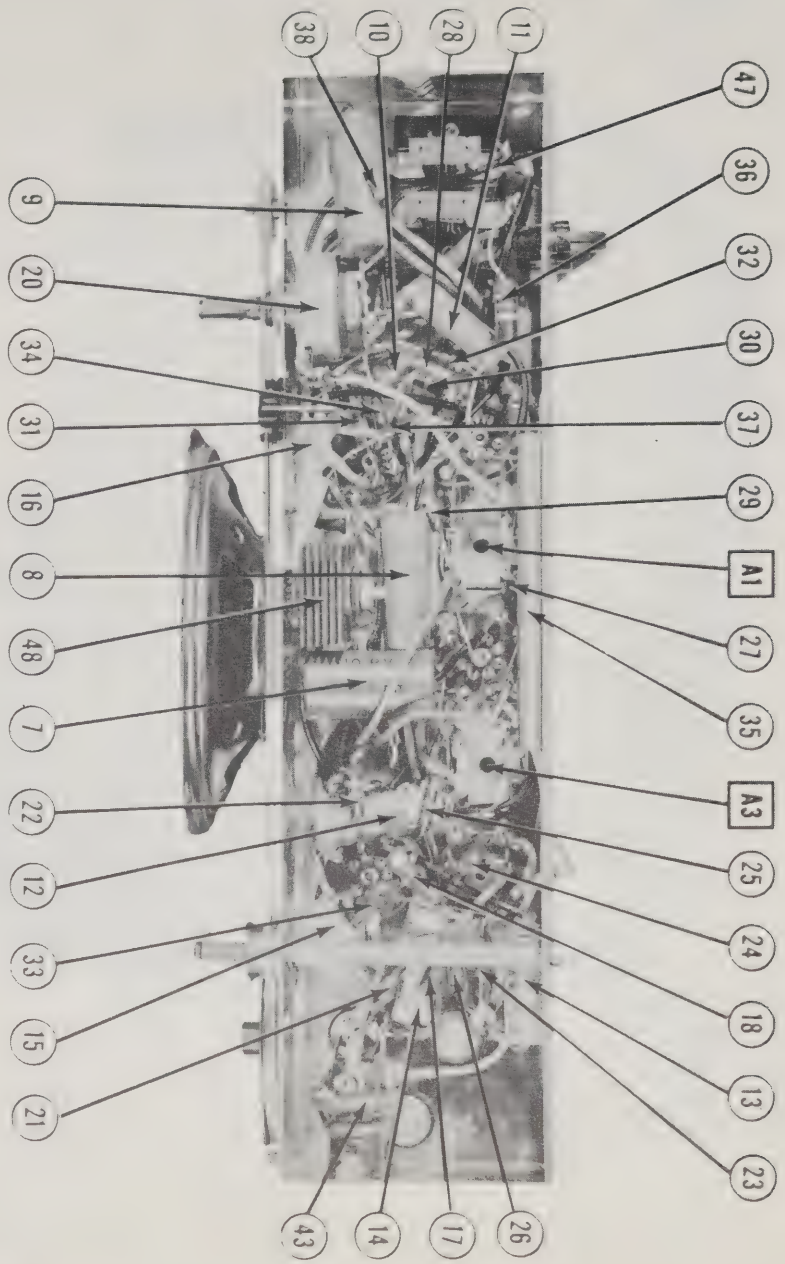
ITEM No.	VOLTAGE	Gen. Electric PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
46	9 V "A" 90 V "B"				753			F6A60	

MISCELLANEOUS

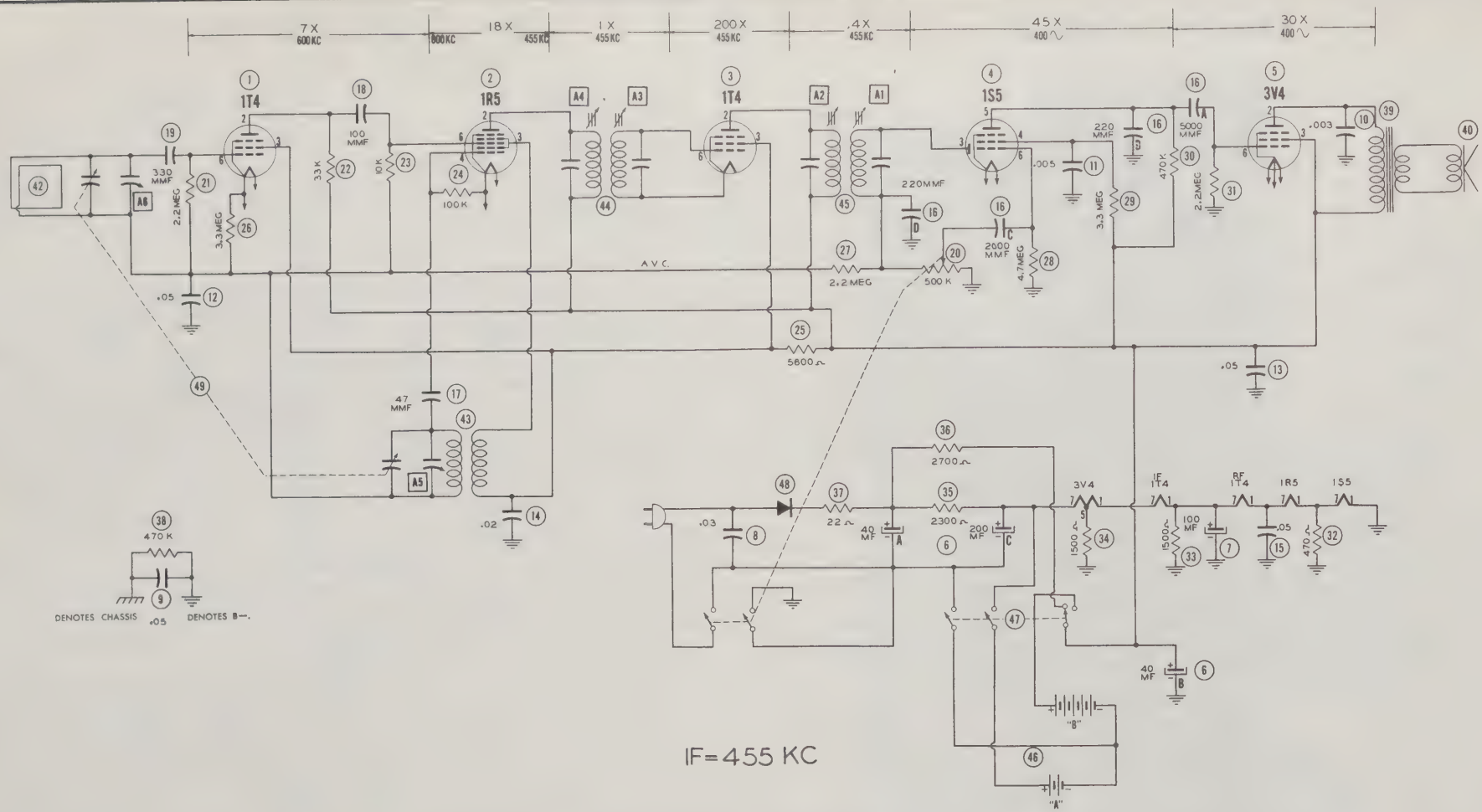
ITEM No.	PART NAME	General Electric PART No.	NOTES
47	Switch	RSW-058	AC-DC/Battery
48	Rectifier	RER-001	Selenium
49	2 Gang Var.Cap.	RCT-032	(26-446MMF, 29-192MMF)
	Cabinet	RAU-038	Maroon
	"	RAU-041	Mahogany
	"	RAU-042	Gray
	Dial	RDS-072	
	Dial Pointer	RDP-040	



CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 150



VOLTAGE READINGS — VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	3.3VDC	27VDC	65VDC	0V.	3.3VDC	.1VDC	4.8VDC
2	1R5	1.5VDC	94VDC	65VDC	-11VDC §	1.5VDC	.4VDC	3.3VDC
3	1T4	4.8VDC	94VDC	65VDC	.4VDC	4.8VDC	4.8VDC	6.4VDC
4	1S5	0V.	0V.	0V.	20VDC	28VDC	0V.	1.5VDC
5	3V4	6.4VDC	92VDC	94VDC	0V.	7.8VDC	0V.	9.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1T4	*	40KΩ	10KΩ	0Ω	*	3.7 Meg.	*
2	1R5	*	5KΩ	10KΩ	100KΩ	*	1.4 Meg.	*
3	1T4	*	5KΩ	10KΩ	400KΩ	*	*	*
4	1S5	0Ω	INF.	500KΩ	3.3 Meg.	470KΩ	4.7 Meg.	*
5	3V4	*	5KΩ	5KΩ	INF.	*	2.2 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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494-11

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting across volume control.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC
MODEL 160

GENERAL ELECTRIC
MODEL 160

GENERAL ELECTRIC MODEL 160

TRADE NAME	General Electric, Model 160
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC-Battery Operated Portable Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output.
POWER SUPPLY	105-125 Volts AC or 2 Volt Storage Battery
RATING	.10 Amp. @ 117 Volts AC or 1.7 Amp. @ 2 Volts DC.
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High Side to pin 6 (Grid) of 1U4 IF tube (3). Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil.	A1,A2	Adjust for maximum output.
2.	.05MFD	High side to pin 6 (Grid) of 1R5. Low side to chassis.	455KC	"	"	A3,A4	Adjust for maximum output. Check adjustment of A1 thru A4.
3.		Loop	580KC	580KC	"	A5,A6	Adjust for maximum output. Adjustment must be done with back cover open, and reading observed with back cover closed.
4.		"	1500KC	1500KC	"	A7	Adjust for maximum output.
5.		"	1500KC	Tune for maximum output.	"	A8,A9	Adjust for maximum output. Repeat steps 3,4 & 5 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

GENERAL ELECTRIC
MODEL-160

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECTRIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1U4	1U4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1U4	1U4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3V4	3V4	6EX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELEC. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	15	150	RCE-007	AF44D	UP2215		EL-221	■ Filter
B	15	150		PRS6/2000	BRH601		UHC-1000	▲ Filter
C	30 @ 12V	1.5						Filament Bypass
7	.05	200	UCC-635	484-05	GT2S5	ST-4-05	TC-15	Audio Feedback
8	.02	200	UCC-631	484-02	GT2S2	ST-4-02	TC-12	Tone Compensation
9	.01	600	UCC-630	684-01	GT6S1	ST-6-01	TC-11	Output Plate Bypass
10	.01	600	UCC-630	684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
11	.005	200	UCC-625	484-005	GT6D5	ST-6-005	TC-25	" "
12	.02	400	UCC-631	484-02	GT4S2	ST-4-02	TC-12	AF Screen Bypass
13	.005	400	UCC-625	484-005	GT6D5	ST-6-005	TC-25	IF Decoupling
14	.01	400	UCC-630	484-01	GT4S1	ST-4-01	TC-11	Osc. Plate Decoupling
15	.05	200	UCC-635	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
16	.5	120	RCC-068			SHH-2		Hash Filter
17	.5	120	RCC-068			SHH-2		" "
18	.003	1500	RCC-090	1684-003	GT16D3	STM-16-003	TR-23	Buffer
19	.05	400	UCC-635	484-05	GT4S5	ST-4-05	TC-15	RF Bypass
20	100	500	UCU-028	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass
21	100	500	UCU-028	1468-0001	5W5T1	MO.5-31	1FM-31	Diode Filter
22	100	500	UCU-028	1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.
23	10	300	RCW-1060	1469-00001	5R5Q1	MOS.5-41	MS-41	Fixed Trimmer. Cer.
24	4	300	RCW-1075	1469-000005	5W5V5	MO.5-55	MS-55	RF Coupling.

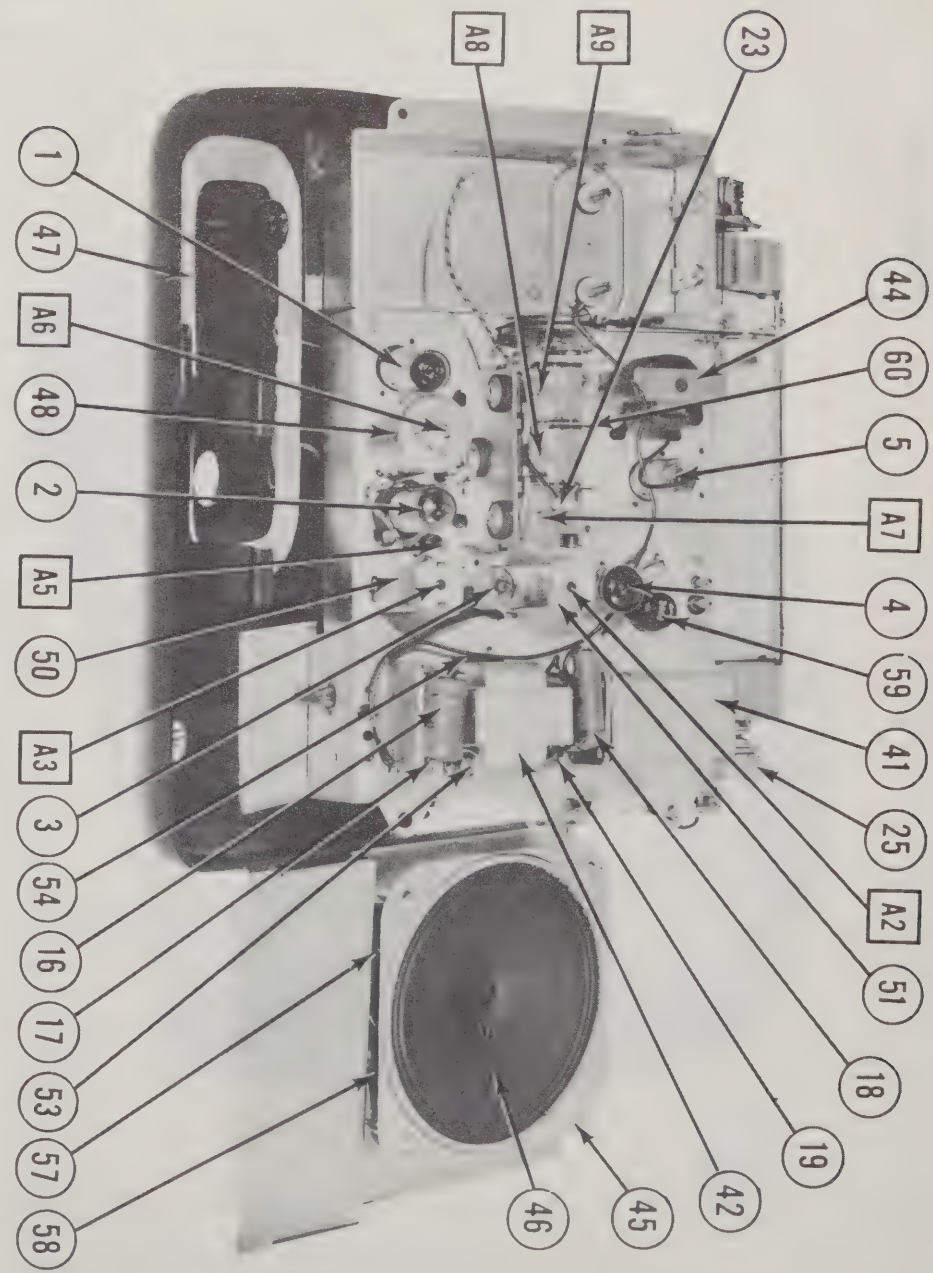
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELEC. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
25A	500KΩ	½	RRC-092	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 25A per Instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELEC. PART No.	IRC PART No.	IDENTIFICATION CODES	
26	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl.	Oscillator Grid
27	15KΩ	½	URD-077	BTS-15K	Br.-Grn.-Or.	Osc. Anode Decoupling
28	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red	IF Decoupling
29	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
30	4.7 Meg.	½	URD-137	BTS-4.7 Meg.	Yl.-Vi.-Grn.	AF Grid
31	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn.	AF Screen
32	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn.	AF Plate Load
33	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn.	Output Grid
34	10KΩ	½	URD-073	BTS-10K	Br.-Blk.-Or.	Tone Compensation
35	10KΩ	½	URD-073	BTS-10K	Br.-Blk.-Or.	" "
36	2200Ω	½	URD-057	BTS-2200	Red-Red-Red	" "
37	2700Ω	1	URE-059	BTA-2700	Red-Vi.-Red	Filter
38	7.5Ω	½	RRW-018		Vi.-Grn.-Gold	Series Filaments
39	7.5Ω	½	RRW-018		Vi.-Grn.-Gold	" "
40	7.5Ω	½	RRW-018		Vi.-Grn.-Gold	" "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: RADIART PART No.	INSTALLATION NOTES
41	Sync.	2.0 VDC	115 ∿	REV-001		

TRANSFORMER VIBRATOR

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
42	2.0VCT @ 1.3A	275VCT .013ADC			RTV-003			

TRANSFORMER CHARGING)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
43	117VAC @ .1A	5.2VCT @ 1.4A			RTO-003			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
44	11500Ω	3.2Ω	500Ω	.36Ω	RTO-055	A-3848#	T22848#	A-2933#	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: GENERAL ELECTRIC PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.	UOP-611	ST-105* MOD. P5-X		* Use baffle adaptor plate.
45	PM	3.2Ω				
	CONE DIA.	VC DIA.				
46	5-1/4"	9/16"				

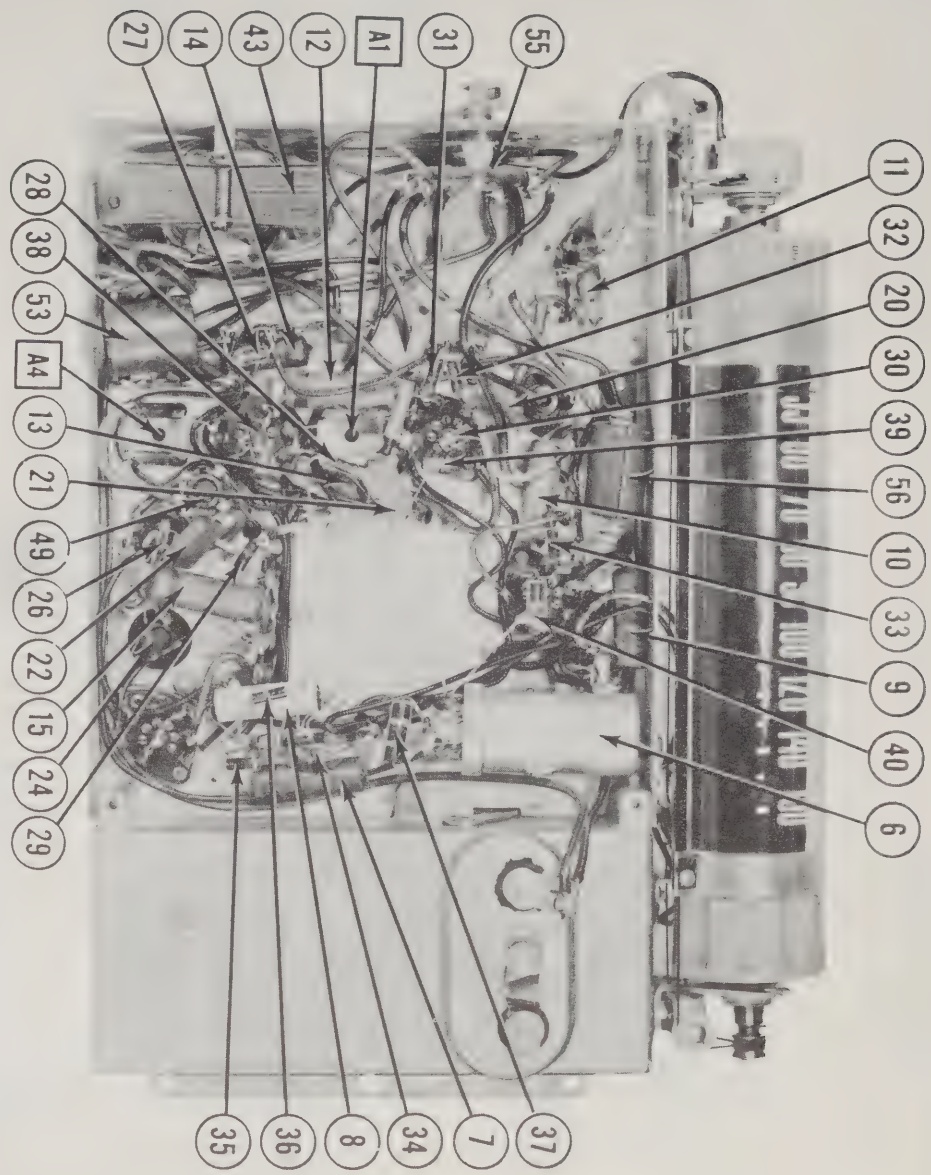
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: MEISSNER PART No.
47	Loop Ant.		1.5Ω	RLL-032	
48	RF Coil	95Ω	4.5Ω	RLB-028	
49	Osc. Coil	1.3Ω	3Ω	RLC-078	
50	Input IF	20Ω	20Ω	RTL-052	16-6668
51	Output IF	21.5Ω	16Ω	RTL-054	16-6669
52	Hash Choke		0Ω	RLI-026	
53	RF Choke		.1Ω	RLF-014	
54	RF Choke		8.2Ω	RLF-015	

MISCELLANEOUS

ITEM No.	PART NAME	GEN. ELECTRIC PART No.	NOTES
55	Switch	RSW-060	Power
56	Bias Cell	RBC-001	
57	Rectifier	REX-001	
58	"	REX-001	
59	Fuse	REF-001	½ Amp.
60	3 Gang Var. Cap	RCT-034	(44-517MMF, 33-510MMF, 30-175MMF).
	Cabinet	RAU-040	
	Knob	RDK-142	Tuning
	"	RDK-143	Volume and Switch
	Dial Scale	RDS-075	

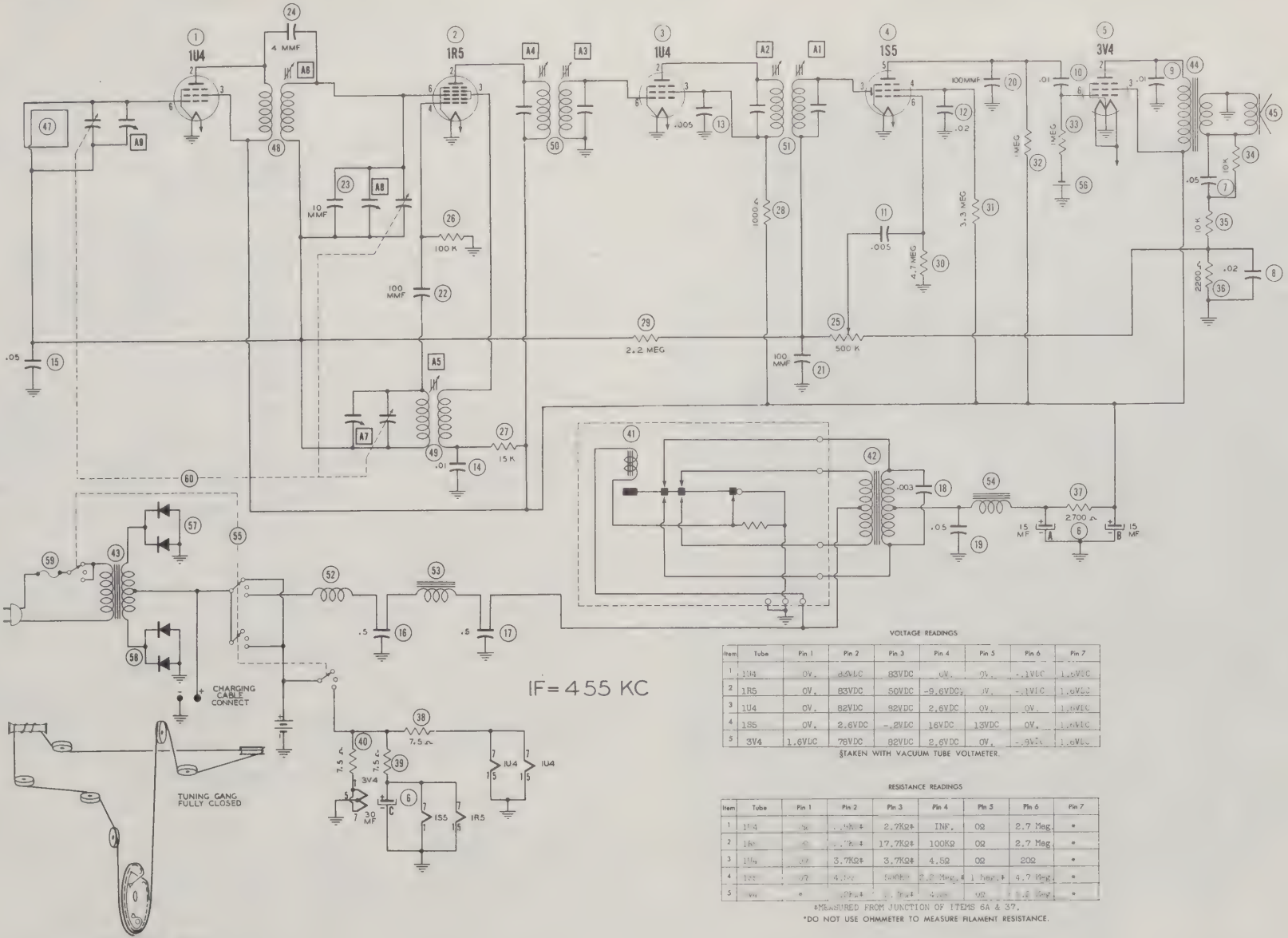
CHASSIS—BOTTOM VIEW



DATE 2/49-494-12 SET # 56 FOLDER #12

GENERAL ELECTRIC MODEL-160

GENERAL ELECTRIC MODEL-160



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	0V.	.65VDC	83VDC	0V.	0V.	-.1VDC	1.6VDC
2	1R5	0V.	83VDC	50VDC	-9.6VDC	0V.	-.1VDC	1.6VDC
3	1U4	0V.	82VDC	92VDC	2.6VDC	0V.	0V.	1.6VDC
4	1S5	0V.	2.6VDC	-.2VDC	16VDC	13VDC	0V.	1.6VDC
5	3V4	1.6VDC	78VDC	82VDC	2.6VDC	0V.	-.3VDC	1.6VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	0Ω	.4KΩ ‡	2.7KΩ‡	INF.	0Ω	2.7 Meg.	*
2	1R5	0Ω	.7KΩ ‡	17.7KΩ‡	100KΩ	0Ω	2.7 Meg.	*
3	1U4	0Ω	3.7KΩ‡	3.7KΩ‡	4.5Ω	0Ω	20Ω	*
4	1S5	0Ω	4.1KΩ	540KΩ	2.2 Meg.‡	1 Meg.‡	4.7 Meg.	*
5	3V4	*	.07KΩ‡	.7KΩ‡	4.5Ω	0Ω	1.6 Meg.	*

‡MEASURED FROM JUNCTION OF ITEMS 6A & 37.
*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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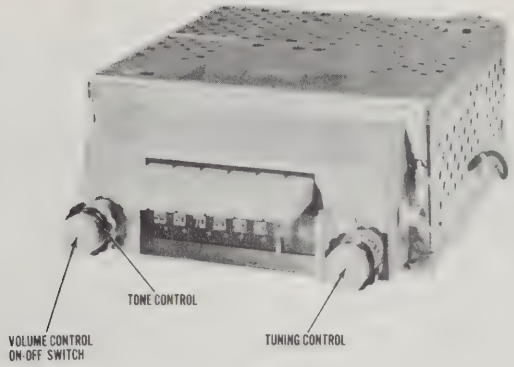
494-12

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



KAISER-FRAZER
MODEL 200002

KAISER-FRAZER MODEL 200002

TRADE NAME	Kaiser-Frazer, Model 200002
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (EIGHT)	Types 6SK7 RF Amp., 7B8 Converter, 6SK7 1F Amp., 6SQ7 Det.-AVC-AF, 6J5 Phase Inverter, (2) 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540-1600KC RATING 7.4 Amp., @ 6.3 Volts DC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 4 (Grid) of 6SK7 IF tube (3). Low side to chassis.	265KC	Tuning slugs fully out.	Across voice coil.	A1, A2	Adjust for maximum output.
2.	.1MFD	High side to pin 6 (Grid) of 7B8. Low side to chassis.	265KC	"	"	A3, A4	Adjust for maximum output. Repeat steps 1 & 2 until no further improvement can be made.
3.	2 30MMFD Cap.	One 30MMFD from ant. socket to chassis. High side in series with other 30MMFD cap. to ant. socket. Low side to chassis.	1400KC	1400KC	"	A5, A6 A7	Adjust for maximum output in the order given.

With receiver mounted in car adjust A8 for maximum volume on weak station around 1200KC.

The following procedure should be followed only when a core or coil has been replaced.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	2 30MMFD	One 30MMFD from ant. socket to chassis. High side in series with other 30MMFD cap. to ant. socket. Low side to chassis.	1675KC	1600KC (Slugs fully out.)	Across voice coil.	A5,A6 A7,A8	Screw ant., Rf, converter and osc. cores completely out of their coils. Adjust A5,A6,A7, A8 for maximum output. Replace cores to their approximate original positions.
5.	2 30MMFD	One 30MMFD from ant. socket to chassis. High side in series with other 30MMFD cap. to ant. socket. Low side to chassis.	1400KC	1400KC	Across voice coil.	A9,A10 A11, A12	Adjust for maximum output in order given.
6.	2 30MMFD	"	600KC	Tune for maximum output.	"	A13	Rock tuning control and adjust for maximum output. Repeat steps 4 and 5 2nd check receiver at 1200KC. If weak or off calibration repeat steps 4,5, and 6. Apply speaker cement to core screws.

With receiver mounted in car adjust A8 for maximum volume on weak station around 1200KC.

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PARTS LIST AND DESCRIPTIONS

KAISER-FRAZER
MODEL 200002

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELEC. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	7B8	7B8	8X	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inverter	6J5	6J5	6Q	
6	Power Output	6V6GT	6V6GT	7AC	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELEC. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	20	350	RCE-075	AF444J4A	UF2P45CC*	DY-404	EL-442	● Filter
B	10	300			BR1235			▲ "
C	20	300						■ "
D	20	25						Cathode Bypass
10	.5	120	UCC-645		GT2P5	SHH-1	68P25	Hash Filter
11	.5	120	UCC-645		GT2P5	SHH-1	68P25	" "
12	.0039	1600	RCC-093	1684-004	GT16D4	STM-16-004	TR-24	Buffer
13	.0033	1600	RCC-092	1684-003	GT16D3	STM-16-003	TR-23	Output Plate Bypass
14	.01	600	UCC-630	684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
15	.01	600	UCC-630	684-01	GT6S1	ST-6-01	TC-11	" "
16	.0047	600	UCC-625	684-005	GT6D5	ST-6-005	TC-25	" "
17	.0047	200	UCC-625	484-005	GT6D5	ST-6-005	TC-25	" "
18	.0033	200	UCC-623	484-003	GT6D3	ST-6-003	TC-23	Tone Compensator
19	.022	200	UCC-621	484-02	GT4S2	ST-4-02	TC-12	" "
20	.047	200	UCC-635	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
21	.1	400	UCC-640	484-1	GT4P1	ST-4-1	TC-1	Screen Bypass
22	.1	200	UCC-640	484-1	GT2P1	ST-2-1	TC-1	IF Cathode Bypass
23	.1	200	UCC-640	484-1	GT2P1	ST-2-1	TC-1	Cathode Bypass
24	250	500	RCU-279	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
25	100	500	RCU-284	1469-0001	5R5T1	MOS.5-31	MS-31	Osc. Grid Cap.
26	100	500	RCU-284	1469-0001	5R5T1	MOS.5-31	MS-31	RF Bypass
27	250	500	RCU-279	1468-00025	5W5T25	MO.5-325	1FM-325	RF Coupling
28	100	500	RCU-284	1468-0001	5W5T1	MO.5-31	1FM-31	" "
29	350	300	RCN-008					Compensating Cap. Cer.
30	4000	500	RCU-190	1467-004	1D5D4	MW.5-24	1FM-24	AVC Filter

* Omit one bypass section.

CONTROLS

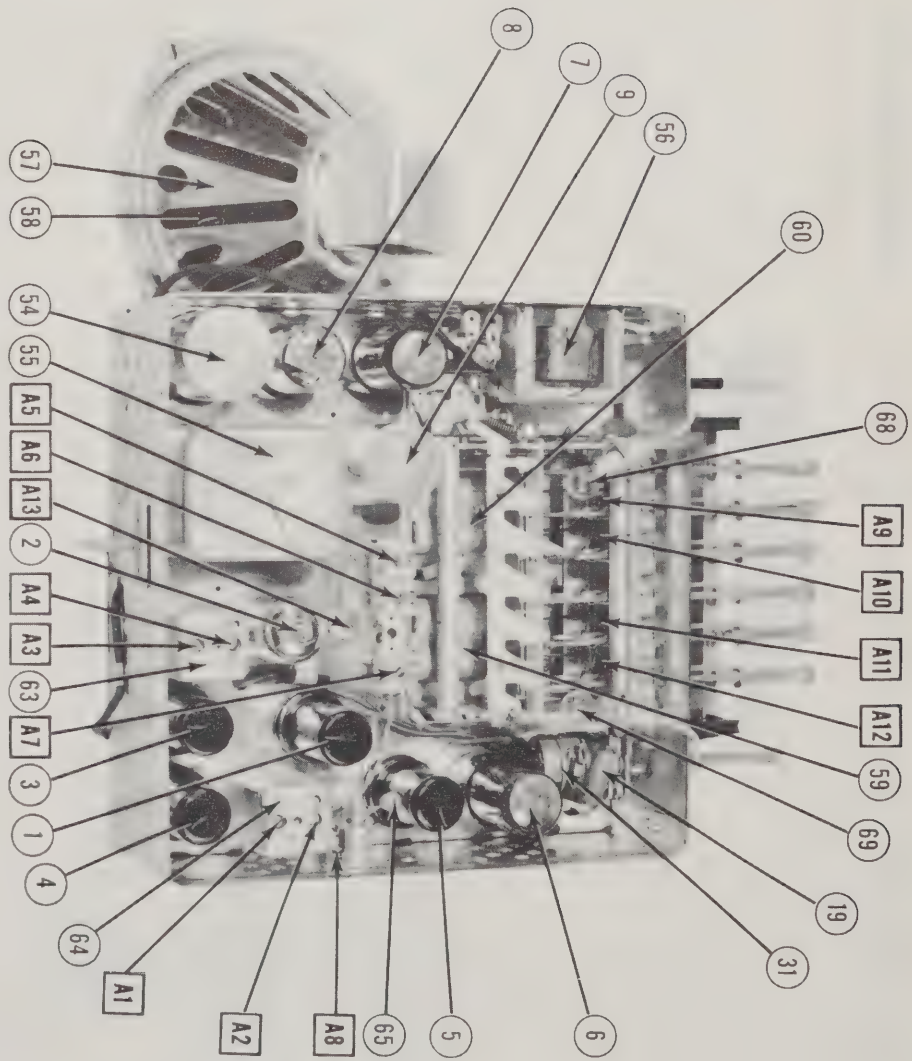
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELEC. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31A	250KΩ	½	RRC-093			Volume Control and switch tapped @ 500KΩ
B	1.5 Meg.	½				Tone Control See Note
32	800Ω	1	RRC-048			Sensitivity Control.

Note: Volume control and switch and tone control are ganged together.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELEC. PART No.	IRC PART No.	IDENTIFICATION CODES	
33	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl.	AVC Network
34	18KΩ	½	URD-079	BTS-18K	Br.-Gray-Or.	RF Plate Load
35	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl.	Converter Grid
36	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or.	Osc. Grid
37	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue	Osc. Grid
38	15KΩ	½	URD-077	BTS-15K	Br.-Grn.-Or.	Osc. Anode Decoupling
39	2000Ω	½	URD-1056	BTS-2200	Red-Blk.-Red	IF Cathode
40	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
41	47KΩ	1	URD-089	BTA-47K	Yl.-Vi.-Or.	Screen Dropping
42	22KΩ	½	URD-081	BTS-22K	Red-Red-Or.	Tone Compensation
43	15 Meg.	½	RRD-1014	BTS-15 Meg.	Br.-Grn.-Blue	AF Grid
44	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl.	AF Plate Load
45	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue	Phase Inverter Grid
46	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl.	Phase Inverter Plate Load
47	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl.	Phase Inverter Cathode
48	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl.	Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	GEN. ELECT. PART No.	IRC PART No.		
49	470KΩ	½	URD-113	BTS-470K	Yl.-Vl.-Yl.	Output Grid
50	330Ω	2		BW-2-330	Or.-Or.-Br.	Output Cathode
51	2200Ω	1	URE-057	BTA-2200	Red-Red-Red	Filter
52	1100Ω	1	URE-1050	BTA-1200	Br.-Br.-Red	Filter
53	10KΩ	1	URE-073	BTA-10K	Br.-Blk-Or.	Hash Suppressor.

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA		INSTALLATION NOTES
				GEN. ELEC. PART No.	RADIART PART No.	
54	Int.	6.3 VDC	115∿	REV-002	5301	

TRANSFORMER VIBRATOR

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GEN. ELEC. PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
55	6.3VDC @ 3.15A	550VCT .053ADC			RTP-065			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GENERAL ELECTRIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
56	10KΩ CT	3.8Ω	375Ω CT	.2Ω	RTO-056	A-3823	T22S87	A-2936	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. ELEC. PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
57	PM	3.8Ω	ROE-001		69A3	
	CONE DIA.	VC DIA.				
58	6½"x 9"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GENERAL ELECTRIC PART No.	MEISSNER PART No.	
59A	Ant. RF Coil		11Ω			Items 59A & 59B come as one unit, part nos. RLX-017, RLX-018, RLX-019, or RLX-020. Specify part no. and color code.
B	RF Coil		11Ω			
60A	Conv. Coil		10.8Ω			Items 60A & 60B come as one unit, part nos. RLX-021, RLX-022, RLX-023 or RLX-024. Specify part no. and color code.
B	Osc. Coil		2.5Ω			
61	Osc. Shunt coil	4.8Ω	8Ω	RLC-079		
62	Osc. Trimmer coil		.8Ω	RLC-048		
63	Input IF	62Ω	58Ω	RTL-086		
64	Output IF	58Ω		RTL-087		
65	Ant. Choke		1.5Ω	RLI-063		
66	Filament Chk.		.5Ω	RLI-064		
67	Noise Choke		0Ω			

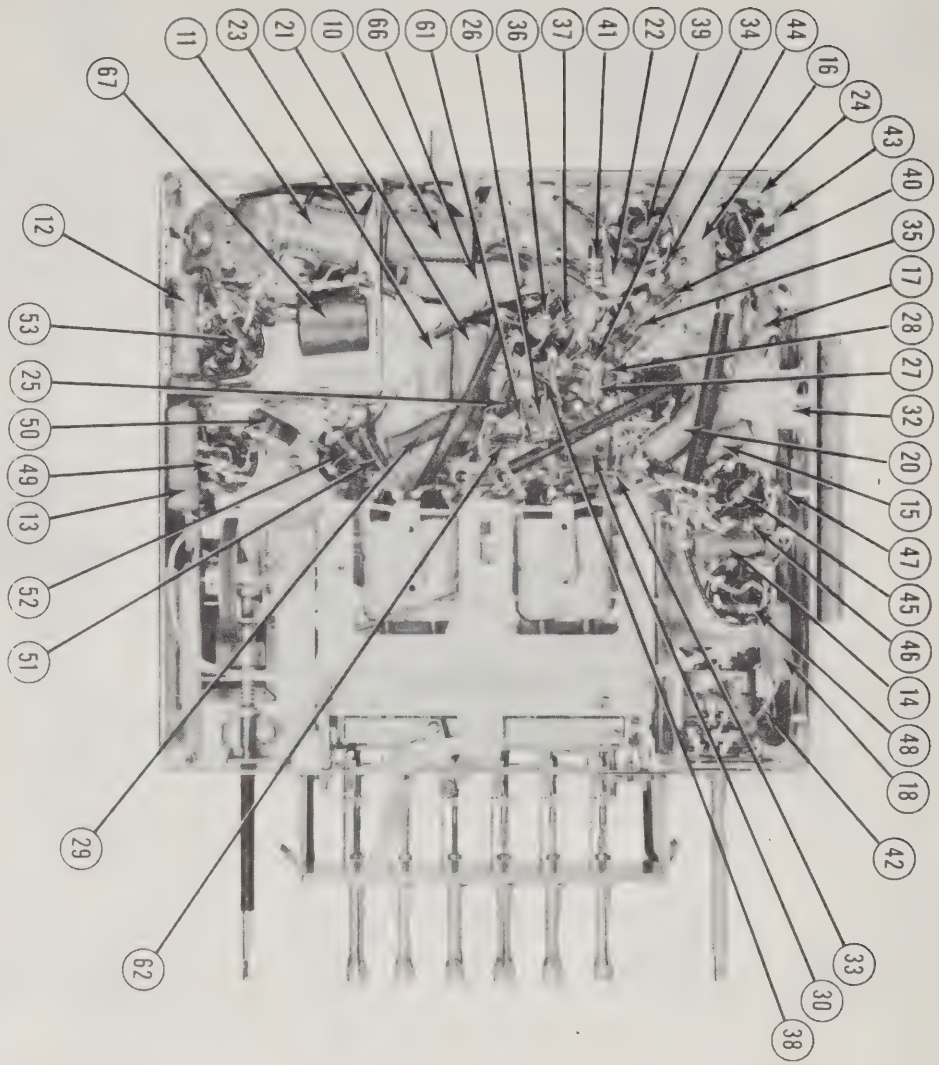
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GENERAL ELECTRIC PART No.		
68	Bayonet	6-8V	0.4A	White			Type #55
69	"	6-8V	0.4A	"			" "

MISCELLANEOUS

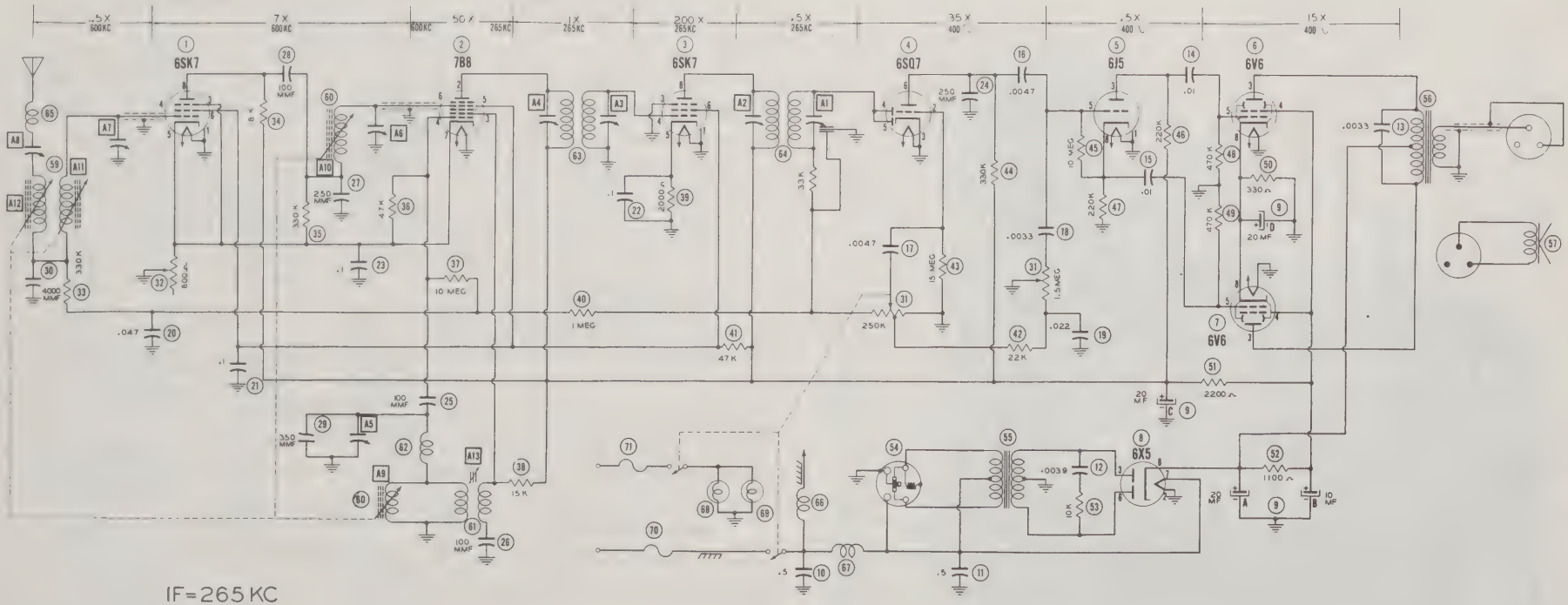
ITEM No.	PART NAME	GEN. ELEC. PART No.	NOTES
70	Fuse		14 Amp.
71	"		14 Amp.
A5	Trimmer Strip	RCY-050	Osc. Adj.
A6			RF Adj.
A7			Ant. Adj.
A8	Trimmer	RCY-028	Ant. Adj.

CHASSIS—BOTTOM VIEW



KAISER-FRAZER MODEL 200002

DATE 2/49-#494-13 SET #56 - FOLDER #15



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	6.2VDC	-.1VDC	6.2VDC	81VDC	6.2VDC	150VDC
2	7B8	0V.	-.2VDC	160VDC	-4.4VDC	81VDC	-.1VDC	6.4VDC	6.2VDC
3	6SK7	0V.	6.2VDC	0V.	0V.	6.2VDC	81VDC	0V.	82VDC
4	6SQ7	0V.	-.5VDC	0V.	-.4VDC	-.4VDC	91VDC	0V.	6.2VDC
5	6J5	0V.	0V.	125VDC	225VDC	.2VDC	0V.	6.2VDC	85VDC
6	6V6GT	0V.	0V.	260VDC	240VDC	0V.	.2VDC	6.2VDC	270VDC
7	6V6GT	0V.	0V.	260VDC	240VDC	0V.	260VDC	6.2VDC	17VDC
8	6X5GT	0V.	0V.	275VAC	275VAC	275VAC	280VAC	6.2VDC	270VDC

TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	500K	1.6 Meg.	800Ω	170KΩ	.1Ω	130KΩ
2	7B8	0Ω	1.1KΩ	140KΩ	47K	170KΩ	1.6 Meg.	47KΩ	.1Ω
3	6SK7	0Ω	.1Ω	0Ω	58Ω	2KΩ	170KΩ	0Ω	130KΩ
4	6SQ7	0Ω	1. Meg.	0Ω	290KΩ	290KΩ	450KΩ	0Ω	.1Ω
5	6J5	0Ω	0Ω	0Ω	340KΩ	120KΩ	10 Meg.	470KΩ	.1Ω
6	6V6GT	0Ω	0Ω	130KΩ	130KΩ	470KΩ	10 Meg.	.1Ω	350Ω
7	6V6GT	0Ω	0Ω	130KΩ	130KΩ	470KΩ	1.6MΩ	.1Ω	350Ω
8	6X5GT	0Ω	0Ω	275Ω	240Ω	240Ω	10KΩ	.1Ω	120KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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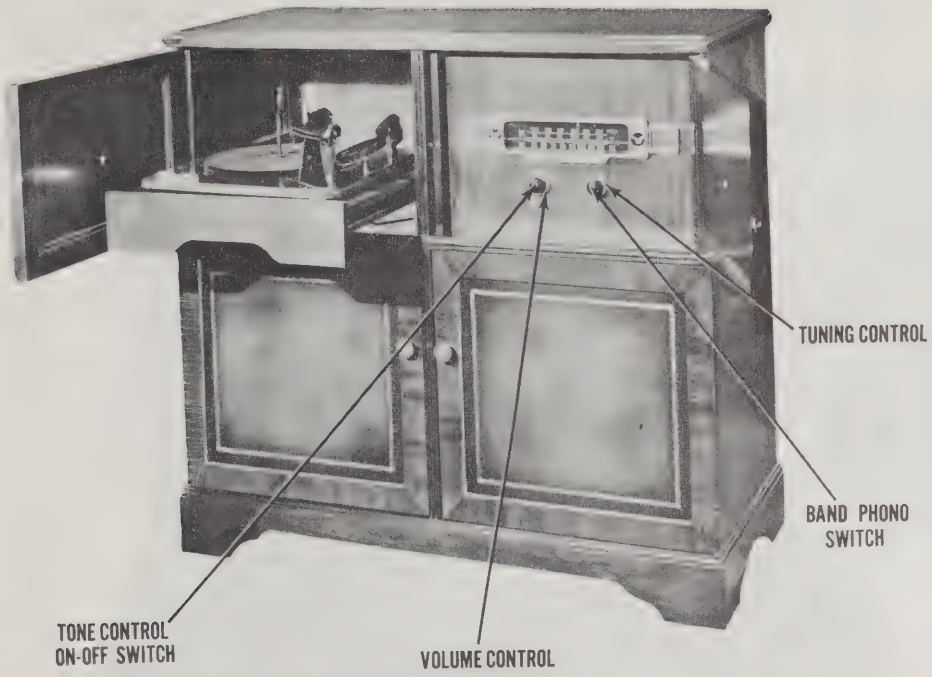
494-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1. - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2. - Socket connections are shown as bottom views.
3. - Measured values are from socket pin to common negative.
4. - Battery voltage maintained at 6.3 volts for voltage readings.
5. - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. - Volume control at maximum, no signal applied for voltage measurements.

MAJESTIC MODELS
7FM877, 7FM888 (Ch. 7C11D)



MAJESTIC MODELS
7FM877, 7FM888 (Ch. 7C11D)

MAJESTIC MODEL 7FM888

TRADE NAME	Majestic, Models 7FM877, 7FM888 (Ch. 7C11D)
MANUFACTURER	Majestic Radio and Television Corp., Elgin, Illinois
TYPE SET	AC-DC Operated Comb. Phono-Radio, AM-FM Superheterodyne Rec. with Loop Antenna.
TUBES(SEVEN)	Types 6C4 FM RF Amp., 12AT7 FM Converter, 12BE6 AM Converter, 6SS7 IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC.
RATING	.30 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC Freq. Mod. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to rear AM stator of tuning cap. Low side to chassis.	455KC	AM (counter clockwise.)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
		Loop	1500KC	"	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	"	Tune for maximum output.	"	A6	Adjust for maximum output.
4.	300Ω carbon resistor.	High side to ext. FM Ant. terminal. Low side to chassis.	19MC (unmodulated).	FM (center position).	Tuning cap. fully open.	"	A7	Adjust for minimum output.
5.	"	"	104MC (unmodulated).	"	104MC	"	A8	Adjust for minimum output.
6.	"	"	"	"	Tune for minimum output.	"	A9	Rock tuning cap. and adjust for minimum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6C4	6C4	6BG	
2	FM Converter	12AT7	12AT7		
3	AM Converter	12BE6	12BE6	7CH	
4	IF Amp.	6SS7	6SS7	8N	
5	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
6	Power Output	35L6GT	35L6GT	7AC	
7	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	100	150	19-61		UP7DJ63*		EL-452*	● Filter
B	40	150			BR4015		UT-401	▲ Filter
C	40	150					UHC-112	■ Filter
D	100	10						Cathode Bypass
9	10	25	19-58	PRS25/10	BR102A	M-10-25	TA-10	Stabilizing Cap.
10	.05	400	016-8	484-05	GT4S5	ST-4-05	TC-15	Line Filter
11	.2	200	5-51	484-2	GT2P25	ST-2-25	72P3	Line Isolation
12	.01	400	016-5	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.02	400	015-6	484-02	GT4S2	ST-4-02	TC-12	"
14	.005	600	017-4	684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
15	.01	400	015-5	484-01	GT4S1	ST-4-01	TC-11	" "
16	.05	400	015-8	484-05	GT4S5	ST-4-05	TC-15	Phono. Isolation
17	.05	400	015-8	484-05	GT4S5	ST-4-05	TC-15	Changer Isolation
18	.05	400	015-8	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
19	1000	500	4-6	1468-005	1W5D1	MW.5-21	1FM-21	Rectifier Bypass
20A	10000	300	§	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
B	220	300		1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass
21	220	500	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	Diode Filter
22	1000	500	4-6	1468-001	1W5D1	MW.5-21	1FM-21	Decoupling
23	1000	500	4-6	1468-001	1W5D1	MW.5-21	1FM-21	De-Emphasis
24	750	500	6-228	1468-00075	1W5T7	MW.5-37	1FM-37	RF Bypass Power Supply
25	5000	300	4-4	1467-005	1D5D5	MW.5-25	1FM-25	Osc. Feedback Cer.
26	3300	500	021-38	1467-003	1W5D3	MW.5-23	1FM-23	Quench Network
27	30	300	4-5	1468-000025	5W5Q3	MO.5-43	MS-43	Regen. Feedback Cer.
28	1000	500	4-6	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass
29	30	300	4-5	1468-000025	5W5Q3	MO.5-43	MS-43	Osc. Grid Cap. Cer.
30	68	300	4-8					Fixed Padder "
31	2.2	300	6-134					Osc. Coupling "
32	30	300	4-5	1468-000025	5W5Q3	MO.5-43	MS-43	Regen. Feedback
33	470	500	020-67	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass
34	470	500	020-67	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass
35	2.2	300	4-36					RF Coup. Cer. See Note
36	1000	500	4-6	1468-001	1W5D1	MW.5-21	1FM-21	FM Ant. Coupling
37	1000	500	4-6	1468-001	1W5D1	MW.5-21	1FM-21	" " "
38	15	300	6-88				MS-415	Fixed Trimmer Cer.

* Parallel sections to obtain desired capacity.
§ Item 20A,20B,55A, and 55B are combined into one unit obtainable under manufacturers part no. 37-1.
Note: Some models may use 5MMF in this application.

CONTROLS

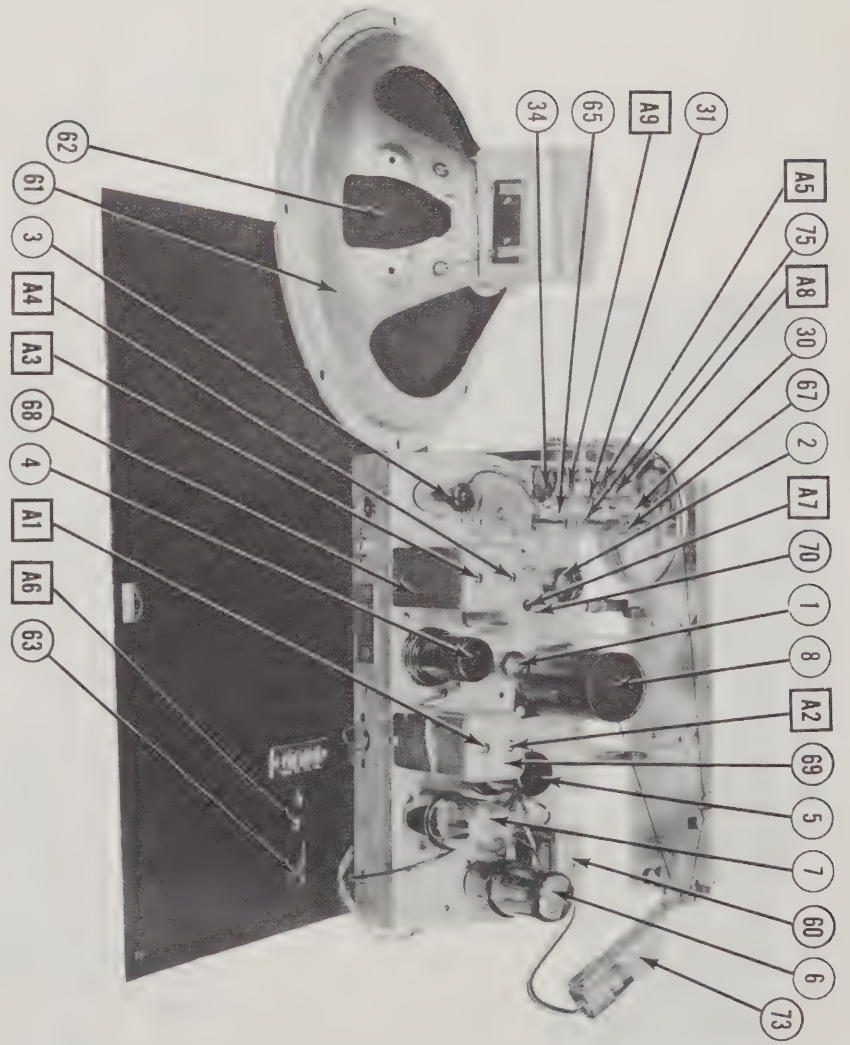
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
39A	500KΩ	½	13-30			Volume control tapped @ 100KΩ
B	2 Meg.					Tone Control.

Note: This is a dual control with a concentric shaft.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES	
40	220Ω	½	02-58		Red-Red-Br.	FM RF Grid
41	220Ω	½	02-58		Red-Red-Br.	FM RF Cathode
42	33KΩ	½	02-150	BTS-33K	Or.-Or.-Or.	FM Oscillator Grid
43	1500Ω	½	02-94	BTS-1500	Br.-Grn.-Red	Quench Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.		
44	22KΩ	½	02-143	BTS-22K	Red-Red-Or.	Converter Cathode
45	150KΩ	½	02-178	BTS-150K	Br.-Grn.-Yl.	Voltage Dropping
46	100KΩ	½	02-171	BTS-100K	Br.-Blk.-Yl.	De-Emphasis
47	22KΩ	½	02-143	BTS-22K	Red-Red-Or.	Oscillator Grid
48	3.3 Meg.	½	02-234	BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network
49	100KΩ	½	02-171	BTS-100K	Br.-Blk.-Yl.	2nd IF Transf. Pri. Shunt
50	22KΩ	½	02-143	BTS-22K	Red-Red-Or.	Diode Filter
51	1200Ω	1	03-90	BTA-1200	Br.-Red-Red	Decoupling
52	12KΩ	½	02-132	BTS-12K	Br.-Red-Or.	Tone Compensation
53	56KΩ	½	02-160	BTS-56K	Grn.-Blue-Or.	Tone Compensation See Note
54	10 Meg.	½	02-255	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
55A	500KΩ	½	§	BTS-470K		AF Plate Load
B	500KΩ	½		BTS-470K		Output Grid
56	150Ω	½	02-52	BW-½-150	Br.-Grn.-Br.	Output Cathode
57	1200Ω	1	03-90	BTS-1200	Br.-Red-Red	Filter
58	24Ω	½	02-17		Red-Yl.-Blk.	Rectifier Ballast
59	390Ω	2	04-69	BW-2-390	Or.-White-Br.	Series Dial Light

Note 1: Some models use 5600Ω ½W in this application.

§ Items 55A and B and 20A and B are combined into one unit obtainable under manufacturers part no. 37-1.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
60	4100Ω	3.5Ω	370Ω Tap @ 16.6Ω	.4Ω	2-40	A-3330		A-3031	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAJESTIC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-120†		† Replace output transformer to match 6-8Ω VC.
61	PM	3.75Ω	22-61	MOD P10-5	10A31	
	CONE DIA.	VC DIA.				
62	9-3/4"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	
63	AM Loop Ant.	.2Ω	1Ω	S-1686		
64	FM Dipole Ant.		0Ω	S-2020		
65	FM Ant. Coil		0Ω	3-209		
66	AM Osc. Coil	1.2Ω	5Ω	S-1684	14-1060‡	‡ Add 50 MMF Cap. from High Side of Tuning Cap. to Osc. Grid.
67	FM Osc. Coil		0Ω	3-208		
68	AM 1st IF	10Ω	10Ω	3-116	16-6658	
69	AM 2nd IF	11Ω	11Ω	3-117	16-6660	
70	FM IF	.5Ω	2Ω	S-1678		
71	RF Choke		1.3Ω	S-1928		
72	RF Choke		1.3Ω	S-1928		

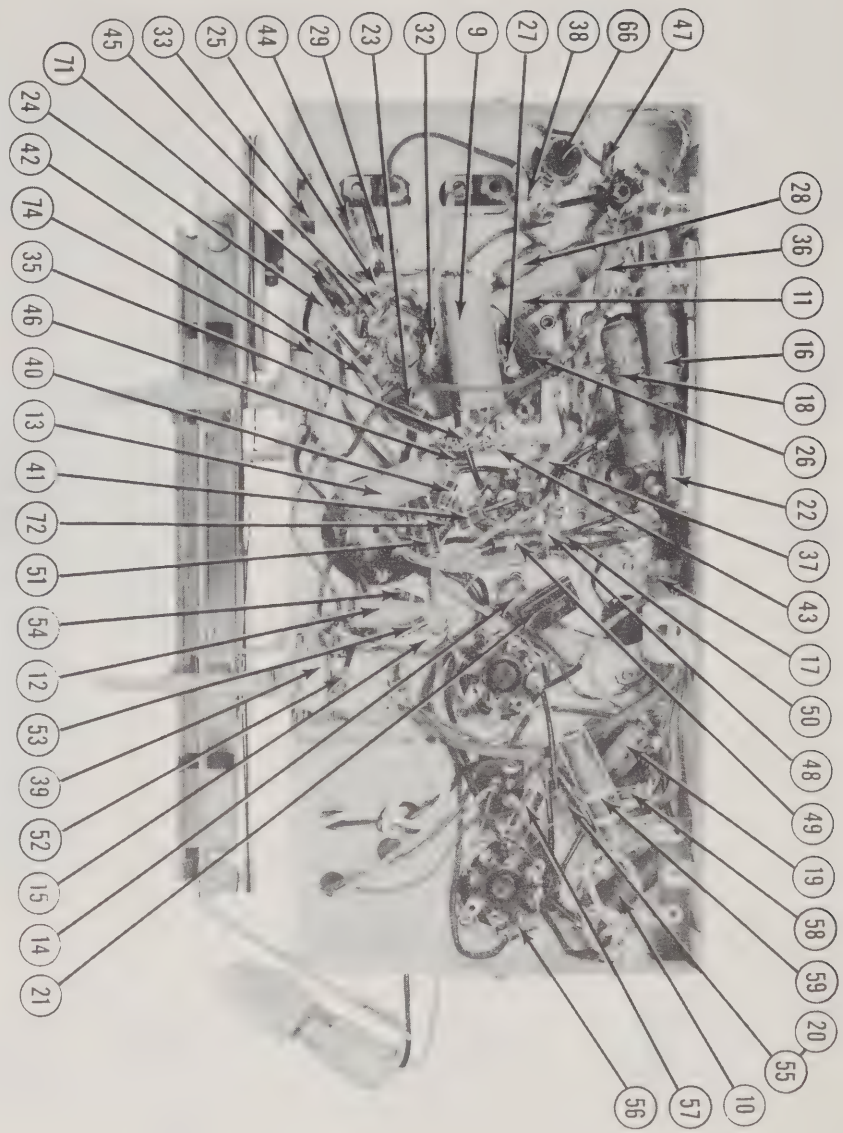
DIAL LIGHT

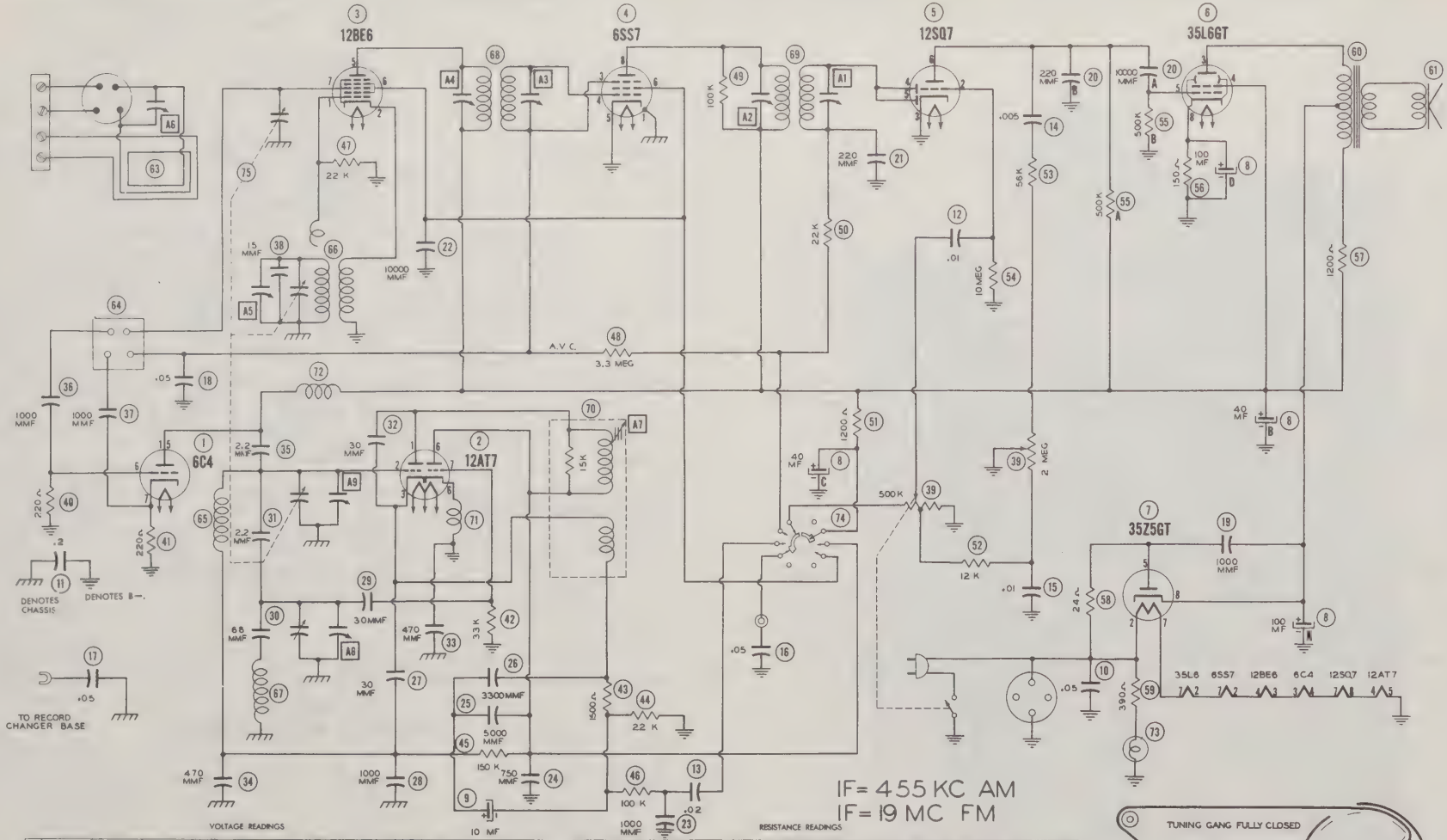
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MAJESTIC PART No.		
73	Bayonet	110V			26-21		110VAC

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
74	Switch	11-81	Band-Phono.
75	2 Gang Var. Cap.	7-33	(18-521MMF, 17-187MMF)

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡ 1	6C4	113VDC	0V.	32VAC	28VAC	113VDC	0V.	1.9VDC	-	-
‡ 2	12AT7	100VDC	25VDC	55VDC	12VAC	0V.	105VDC	-2.1VDC	0V.	6VAC
3	12BE6	-4VDC	0V.	32VAC	45VAC	90VDC	75VDC	-.6VDC	-	-
4	6SS7	0V.	45VAC	-.7VDC	-.7VDC	0V.	75VDC	50VAC	90VDC	-
5	12SQ7GT	0V.	-.6VDC	0V.	-.4VDC	-.4VDC	50VDC	25VAC	12VAC	-
6	35L6GT	0V.	50VAC	120VDC	90VDC	0V.	0V.	85VAC	5VDC	-
7	35Z5GT	0V.	117VAC	111VAC	0V.	115VAC	92VAC	85VAC	130VDC	-

‡TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡ 1	6C4	50KΩ	INF.	28Ω	22Ω	50KΩ	220Ω	220Ω	-	-
‡ 2	12AT7	50KΩ	120KΩ	20KΩ	11Ω	0Ω	50KΩ	33KΩ	0Ω	6Ω
3	12BE6	22KΩ	1Ω	28Ω	38Ω	50KΩ	51KΩ	3.5 Meg.	-	-
4	6SS7	INF.	38Ω	3.5 Meg.	3.5 Meg.	0Ω	51KΩ	44Ω	50KΩ	-
5	12SQ7GT	INF.	10 Meg.	0Ω	500KΩ	500KΩ	550KΩ	22Ω	11Ω	-
6	35L6GT	INF.	44Ω	50KΩ	51KΩ	500KΩ	0Ω	70Ω	150Ω	-
7	35Z5GT	INF.	90Ω	85Ω	INF.	115Ω	150Ω	70Ω	50KΩ	-

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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494-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MEISSNER MODEL
TV-1 (CH. 24TV)

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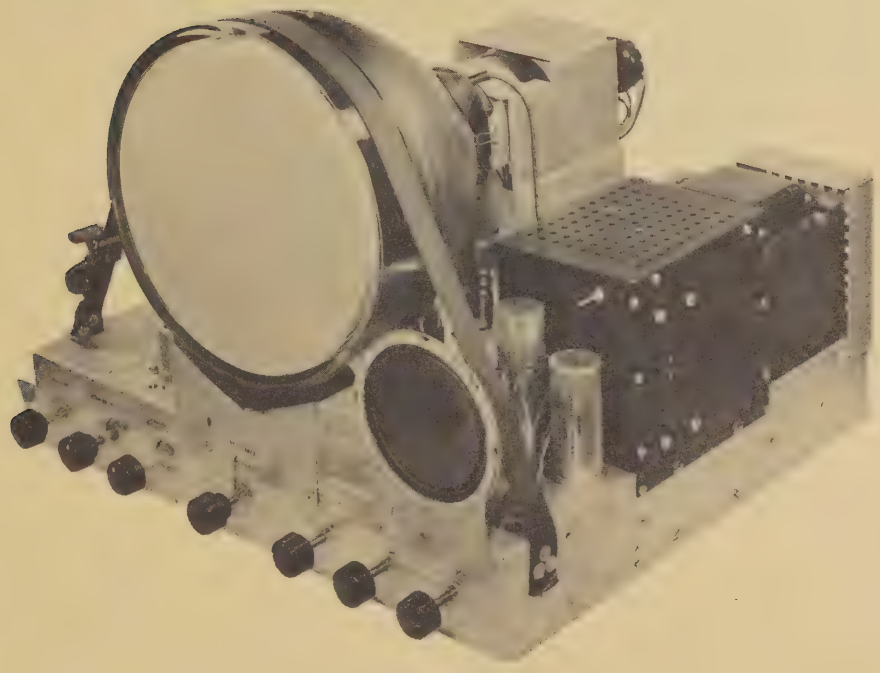

MEISSNER MODEL
TV-1 (CH. 24TV)

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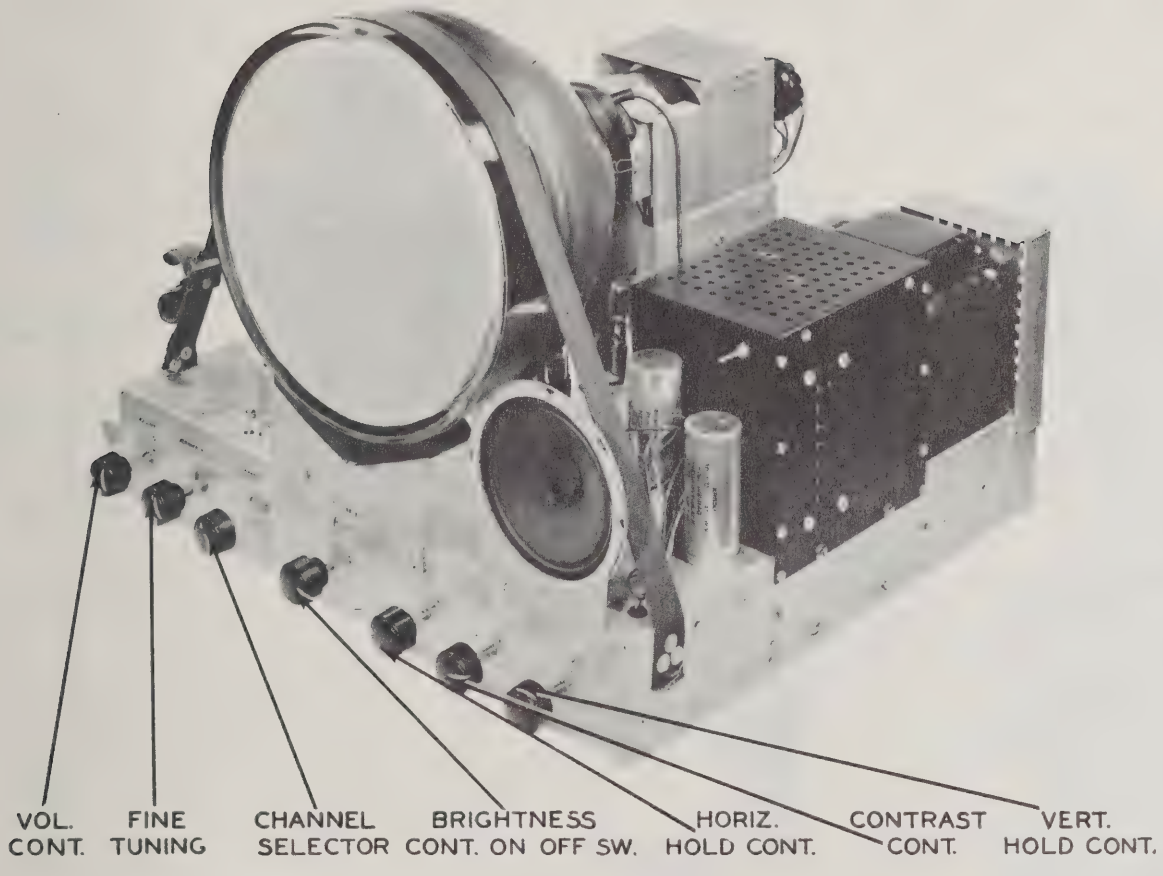

MEISSNER
MODEL 24TV

TRADE NAME	Meissner Model TV-1 (Chassis 24 TV)
MANUFACTURER	Meissner Mfg. Div. of Maguire Ind., Mt. Carmel, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-four
POWER SUPPLY	105-125 Volts 60 Cycle AC RATING 2.2 Amps. @ 117 Volts AC
TUNING RANGE	Channel 2 through 13

INDEX

Alignment Instructions	6,7	Photographs (continued) Resister Identification	12,17
Block Diagram	11	Trans., Inductor & Alignment Identification	4,9
Linearity and Size Adjustments	18	Production Changes	18
Parts List and Description	14,15	Schematic	2
Photographs Capacitor Identification	13,16	Tube Placement Chart	5
Chassis Top View	3,10	Voltage and Resistance Measurements	8
RF Tuner	7		

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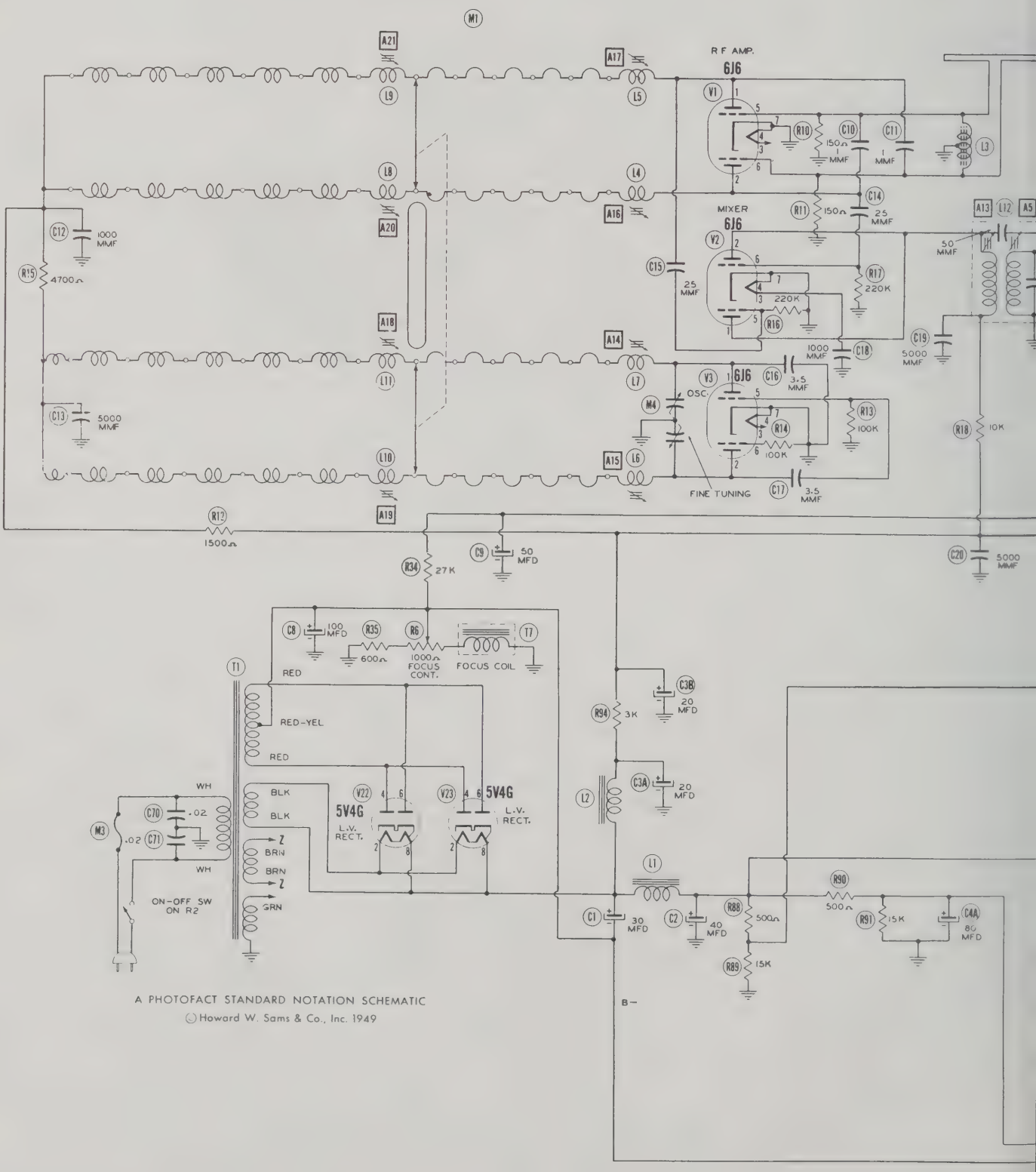

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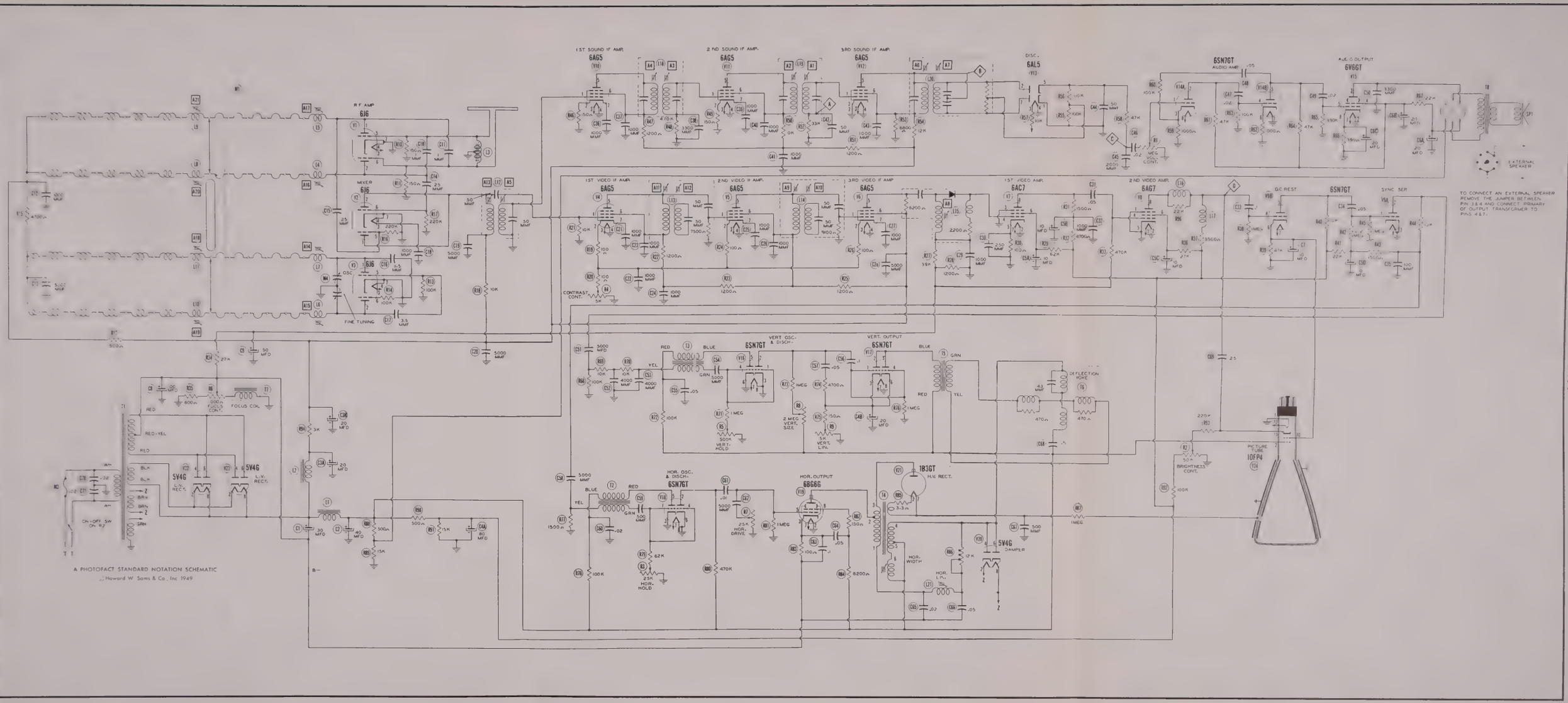

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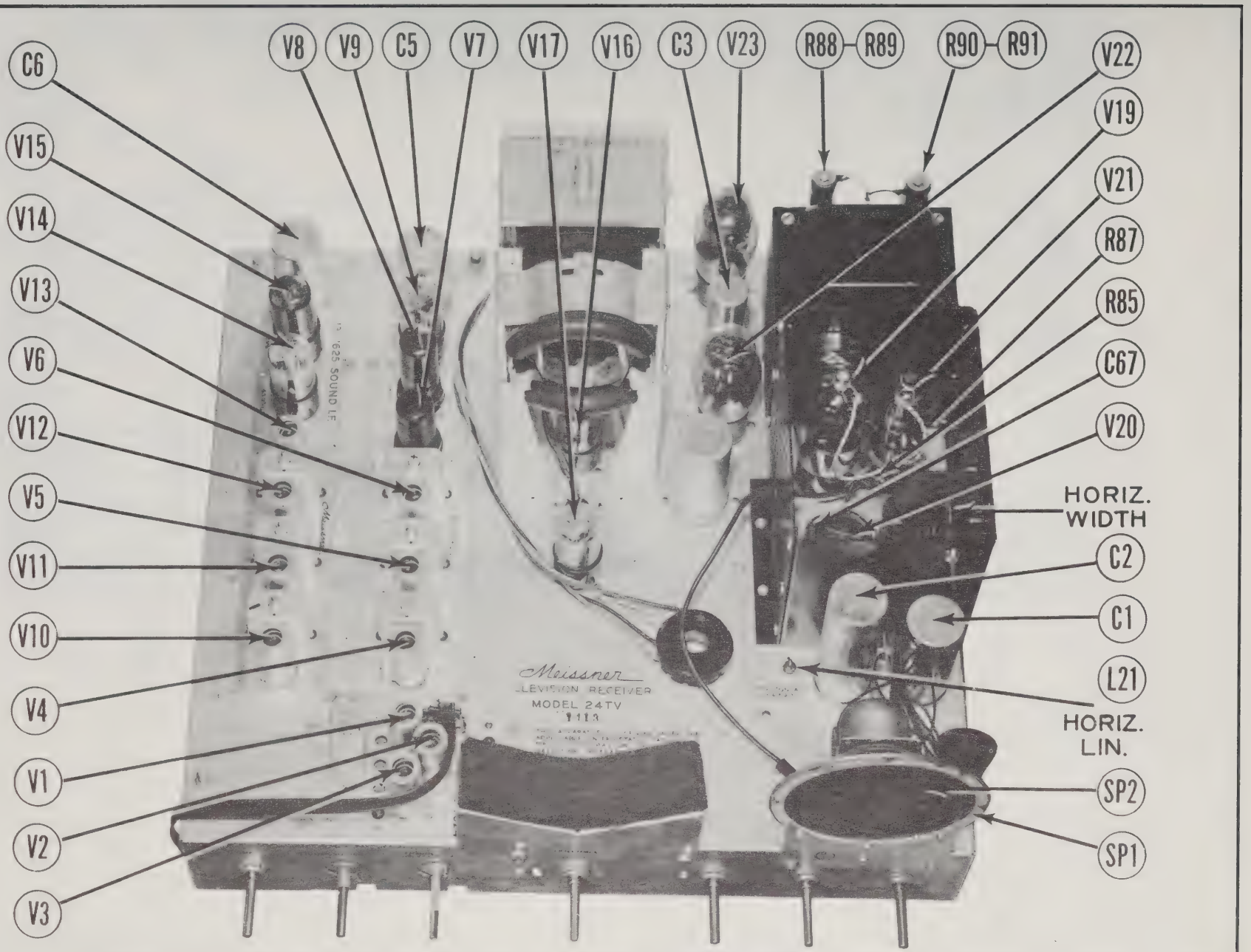
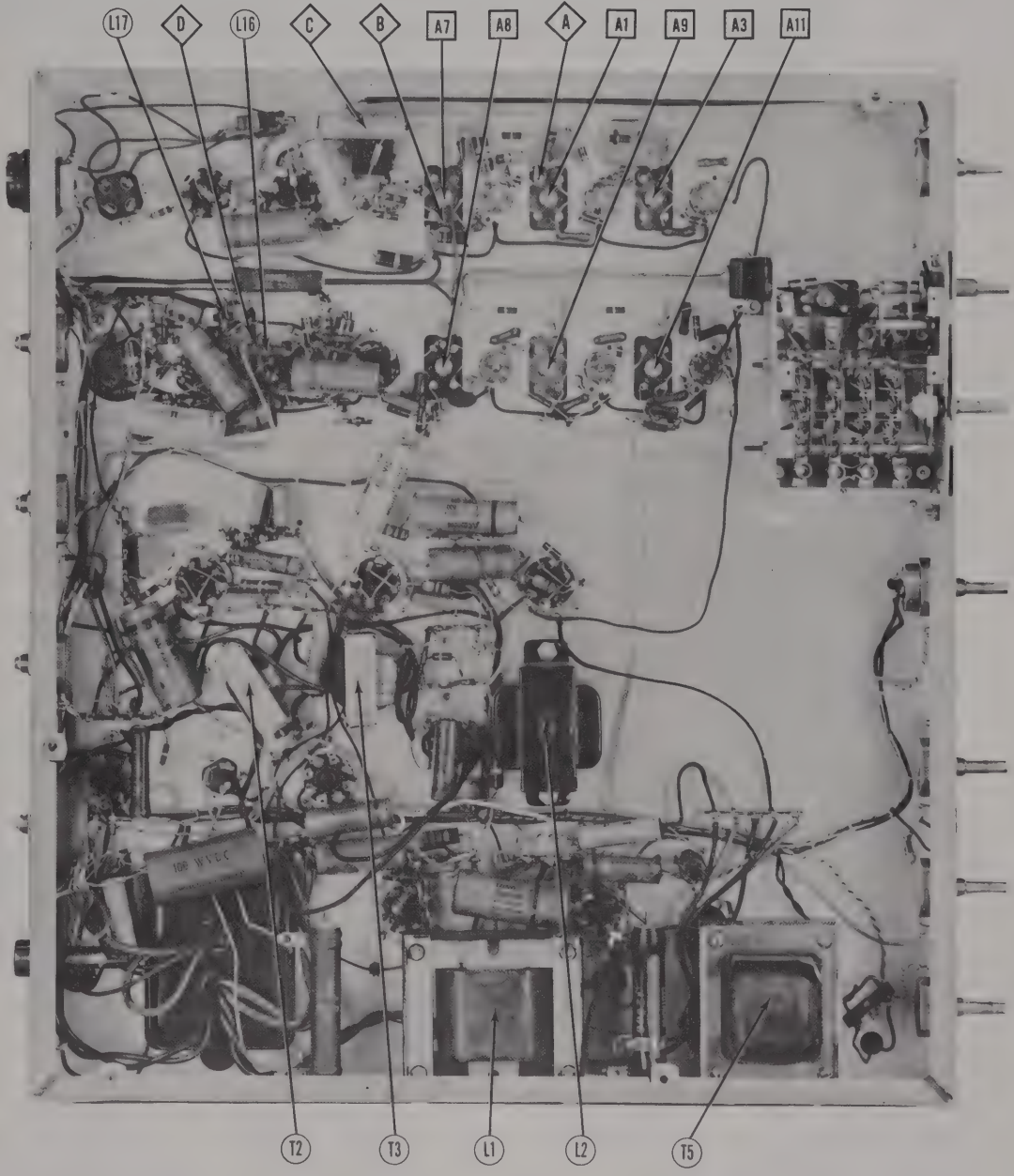
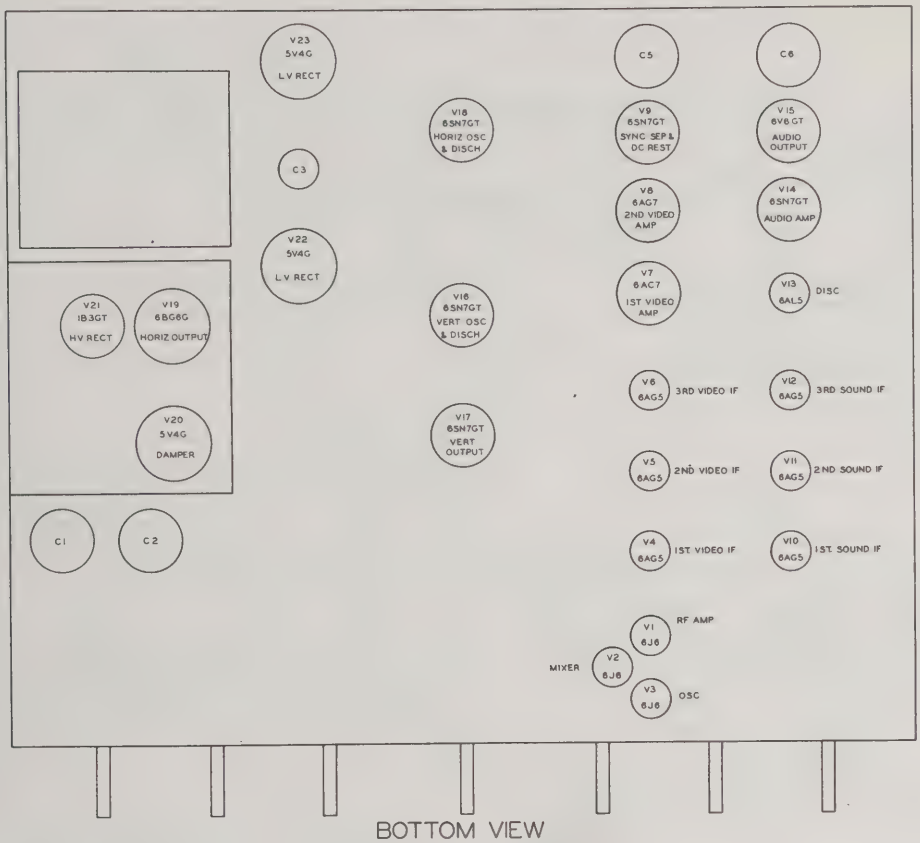


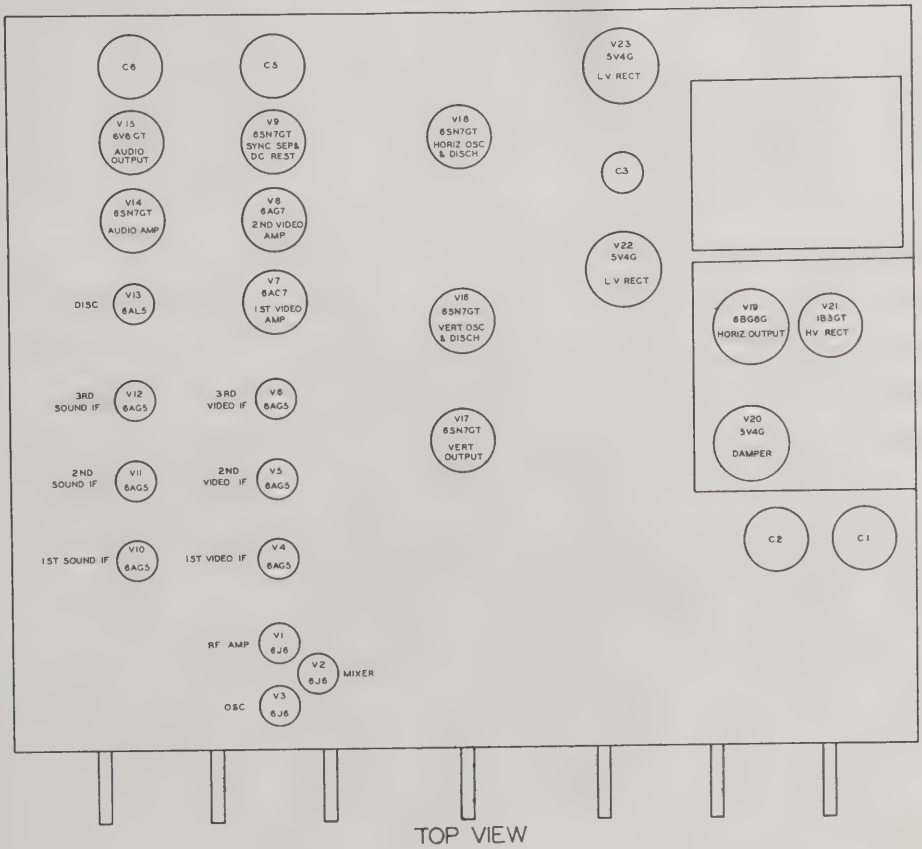
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

MEISSNER
MODEL 24TV

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the shock hazard during alignment, remove the horizontal blocking oscillator tube (6SN7-V18). It is suggested to make a dummy mixer tube as per Fig. 1 and use when specified for visual Video IF Alignment.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	5000MMF.	High side to Pin 1 of 6AG5 (V11). Low side to chassis.	21.25MC (Unmodulated)	Any	DC probe to Point A. Common lead to chassis	A1,A2	Adjust for maximum deflection.
2	5000MMF.	High side to Pin 1 6AG5 (V10). Low side to chassis.	"	"	"	A3,A4	"
3	5000MMF.	High side to Pin 2 of 6J6 (V2) mixer. Low side to chassis.	"	"	"	A5	"
4	5000MMF	"	"	"	DC probe to Point B. Common lead to chassis	A6	"
5	5000MMF	"	"	"	DC probe to Point C. Common chassis.	A7	Adjust for zero deflection. A positive or negative reading on either side designates correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect synchronized sweep voltage from signal generator to horizontal deflection amplifier of the oscilloscope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	5000MMF.	High side to Pin 1 6AG5 (V10). Low side to chassis.	21.25MC (400KC sweep)	21.25MC	Any	Vert. amp. to Point A. Common to chassis.	A1,A2, A3,A4	Adjust for maximum amplitude and symmetry as per Fig. 2.
2	5000MMF.	High side to Pin 7 dummy mixer tube (See Fig. 1). Low side to chassis.	"	"	"	"	A5	"
3	5000MMF	"	"	"	"	Vert. amp. to Point C. Common to chassis.	A6,A7	Adjust A6 for maximum amplitude & straightness of diagonal line. Adjust A7 for marker placement in center of line per Fig.3. Continue with step 6.

VIDEO IF ALIGNMENT

Connect an AC VTVM in series with a .25 MFD capacitor from Point D to chassis. Keep signal gen. output at a point to give an accurate reading but low enough to prevent overloading.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6	5000MMF.	High side to Pin 1 6AG5 (V6). Low side to chassis.	25MC (400 ∿ modulation)	Any	AC probe thru .25 MFD cap. to Point D. Common lead to chassis.	A8	Adjust for maximum deflection.
7	5000MMF.	High side to Pin 1 6AG5 (V5). Low side to chassis.	25.3MC (400 ∿ modulation)	"	"	A9	"
8	5000MMF.	"	27.25MC (400 ∿ modulation)	"	"	A10	Adjust for minimum deflection.
9	5000MMF.	High side to Pin 1 6AG5 (V4). Low side to chassis.	22.5MC (400 ∿ modulation)	"	"	A11	Adjust for maximum deflection.
10	5000MMF.	"	19.75MC (400 ∿ modulation)	"	"	A12	Adjust for minimum deflection.
11	5000MMF.	High side to Pin 2 of 6J6 (V2) mixer. Low side to chassis	23MC (400 ∿ modulation)	"	"	A13	Adjust for maximum deflection. Reconnect VTVM to Point A and slightly retouch A5 for maximum output at 21.25MC (No modulation) if necessary.

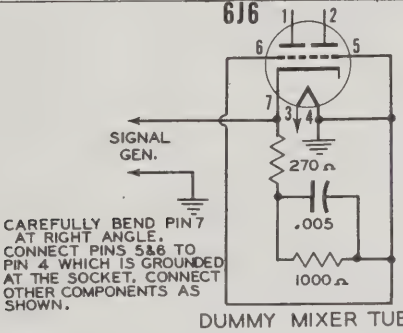
OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12	5000MMF.	High side to Pin 7 dummy mixer tube (See Fig. 1). Low side to chassis.	25MC (10MC sweep)	21.25MC 23.25MC 25.0MC 27.25MC	Any	Vert. amp. to Pin 4 of 6AC7 (V7). Low side to chassis.		Check response pattern to see that markers appear at proper points as per Fig. 4. If not make slight adjustments of A8, A9, A11 and A13 to obtain correct pattern.

OSC. & RF COIL ALIGNMENT

Before aligning oscillator circuit set the oscillator vernier tuning capacitor (fine tuning) to its mid-capacity point.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13	2 150Ω carbon res.	Antenna terminals with 150Ω in series with each lead.	215.75MC (Unmodulated or 209.75MC (Unmodulated)	13 or 12	DC probe to Point ◇. Common to chassis.	A14,A15	Adjust for zero reading.
14	"	"	212.75MC (400 ∿ modulated) 206.75MC (400 ∿ modulated)	13 or 12	AC probe thru .25 MFD cap. to Point ◇. Common to chassis.	A16,A17	Adjust for maximum deflection.
15	"	"	87.75MC (Unmodulated)	6	DC probe to Point ◇. Common to chassis.	A18,A19	Adjust for zero reading.
16	"	"	84.75MC (400 ∿ modulation	6	AC probe thru .25 MFD cap. to Point ◇. Common to chassis.	A20,A21	Adjust for maximum deflection.



DUMMY MIXER TUBE

FIG. 2

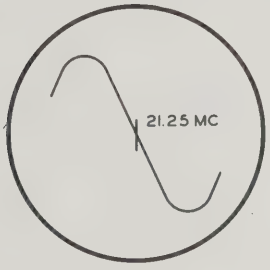


FIG. 3

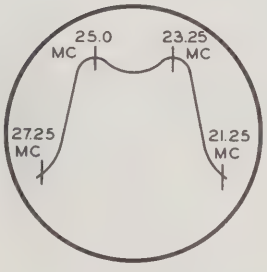
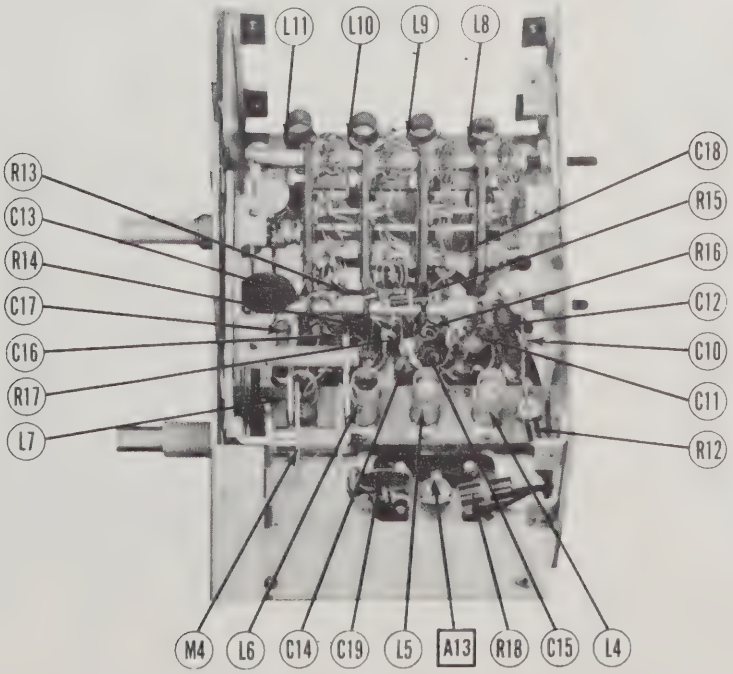


FIG. 4



RF TUNER

MEISSNER MODEL 24TV

VOLTAGE AND RESISTANCE MEASUREMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J6	4.4KΩ *	4.4KΩ*	.1Ω	0Ω	150Ω	150Ω	0Ω	-	-
2	6J6	13KΩ*	13KΩ *	.1Ω	0Ω	220KΩ	220KΩ	0Ω	-	-
3	6J6	9KΩ*	9KΩ*	.1Ω	0Ω	100KΩ	100KΩ	0Ω	-	-
4	6AG5	10KΩ	200Ω	.1Ω	0Ω	6.5KΩ*	6.5KΩ*	200Ω	-	-
5	6AG5	7.5KΩ	200Ω	.1Ω	0Ω	4KΩ*	4KΩ*	200Ω	-	-
6	6AG5	9KΩ	200Ω	.1Ω	0Ω	9KΩ *	3KΩ *	200Ω	-	-
7	6AC7	0Ω	0Ω	0Ω	40KΩ	100Ω	62KΩ *	.1Ω	6.5KΩ*	-
8	6AG7	0Ω	0Ω	0Ω	470KΩ	0Ω	25KΩ*	.1Ω	4KΩ*	-
9	6SN7GT	600KΩ	35KΩ*	0Ω	1 Meg.	12KΩ*	47KΩ	.1Ω	0Ω	-
10	6AG5	.1Ω	150Ω	.1Ω	0Ω	5.5KΩ*	5.5KΩ*	150Ω	-	-
11	6AG5	470KΩ	150Ω	.1Ω	0Ω	15KΩ*	15KΩ*	150Ω	-	-
12	6AG5	33KΩ	0Ω	.1Ω	0Ω	8KΩ*	8KΩ*	0Ω	-	-
13	6AL5	0Ω	160kΩ	.1Ω	0Ω	200KΩ	0Ω	160KΩ	-	-
14	6SN7GT	1 Meg.	70KΩ *	1kΩ	100KΩ	70KΩ *	1KΩ	0Ω	1Ω	-
15	6V6GT	0Ω	0Ω	800Ω*	22KΩ*	330KΩ	100KΩ	.1Ω	390Ω	-
16	6SN7GT	1.5 Meg.	1 Meg.* 1.5 Meg.*	0Ω	1.5 Meg.	100KΩ*	0Ω	.1Ω	0Ω	-
17	6SN7GT	1 Meg.	600Ω*	150Ω 5KΩ	1 Meg.	600Ω	150Ω 5KΩ	.1Ω	0Ω	-
18	6SN7GT	62KΩ	470kΩ*	0Ω	62KΩ	100KΩ*	0Ω	.1Ω	0Ω	-
19	6BG6G	INF.	0Ω	300Ω 600Ω	INF.	1 Meg.	200Ω 500Ω	.1Ω	7KΩ*	12KΩ*
20	5V4G	INF.	12KΩ*	100Ω*	90Ω*	INF.	90Ω*	INF.	12KΩ*	-
21	1B3GT	INF.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	12KΩ*
22	5V4G	INF.	8KΩ	20Ω	230Ω 460Ω	INF.	230Ω 460Ω	1.2KΩ	8KΩ	-
23	5V4G	INF.	8KΩ	INF.	230Ω 460Ω	INF.	230Ω 460Ω	220Ω 450Ω	8KΩ	-
24	10FP4	0Ω	47KΩ	PIN 10 80Ω	PIN 11 220KΩ	PIN 12 .1Ω				

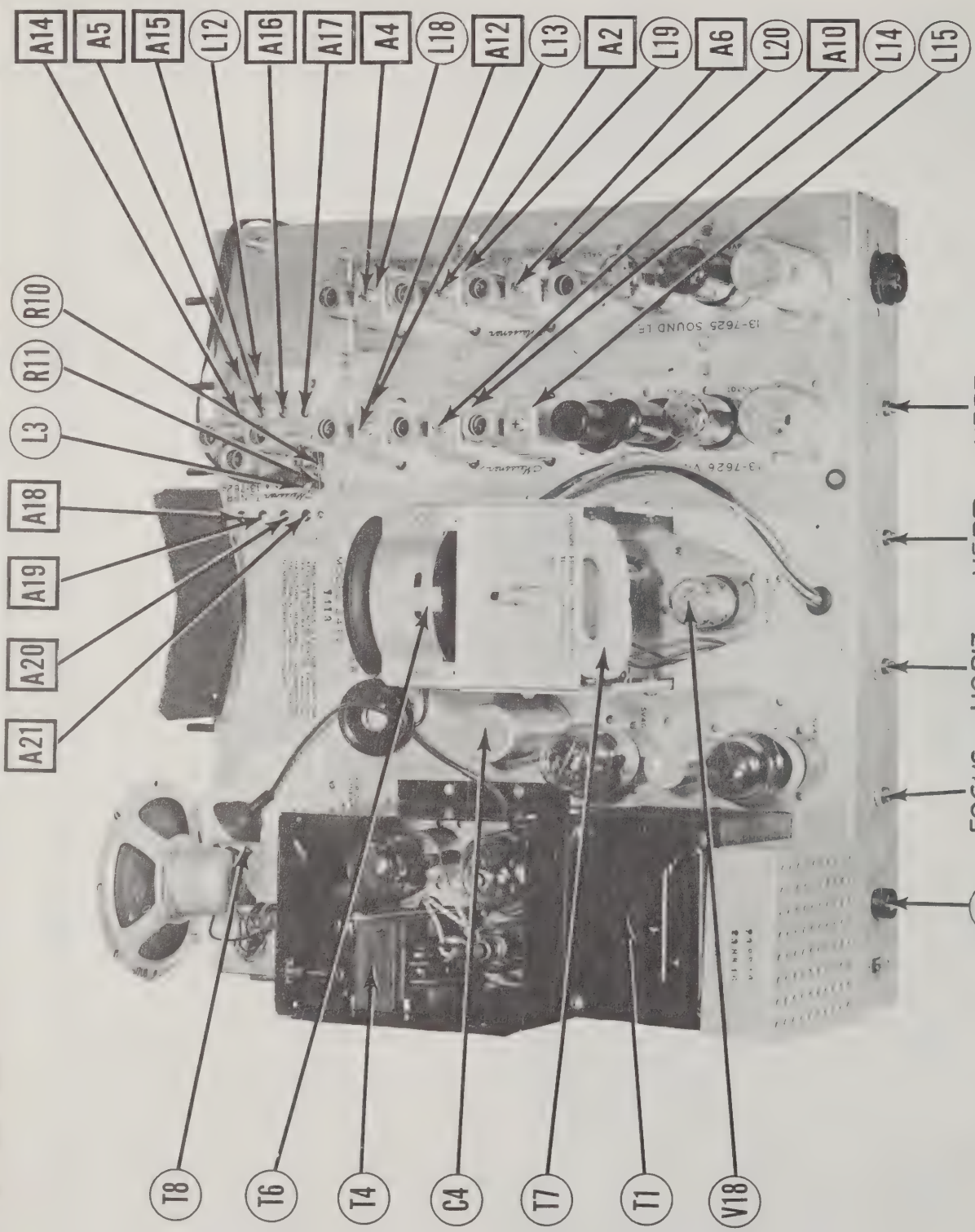
*MEASURED FROM PIN 8 V22.
§TAKEN WITH VACUUM TUBE VOLTMETER.

VOLTAGE READINGS

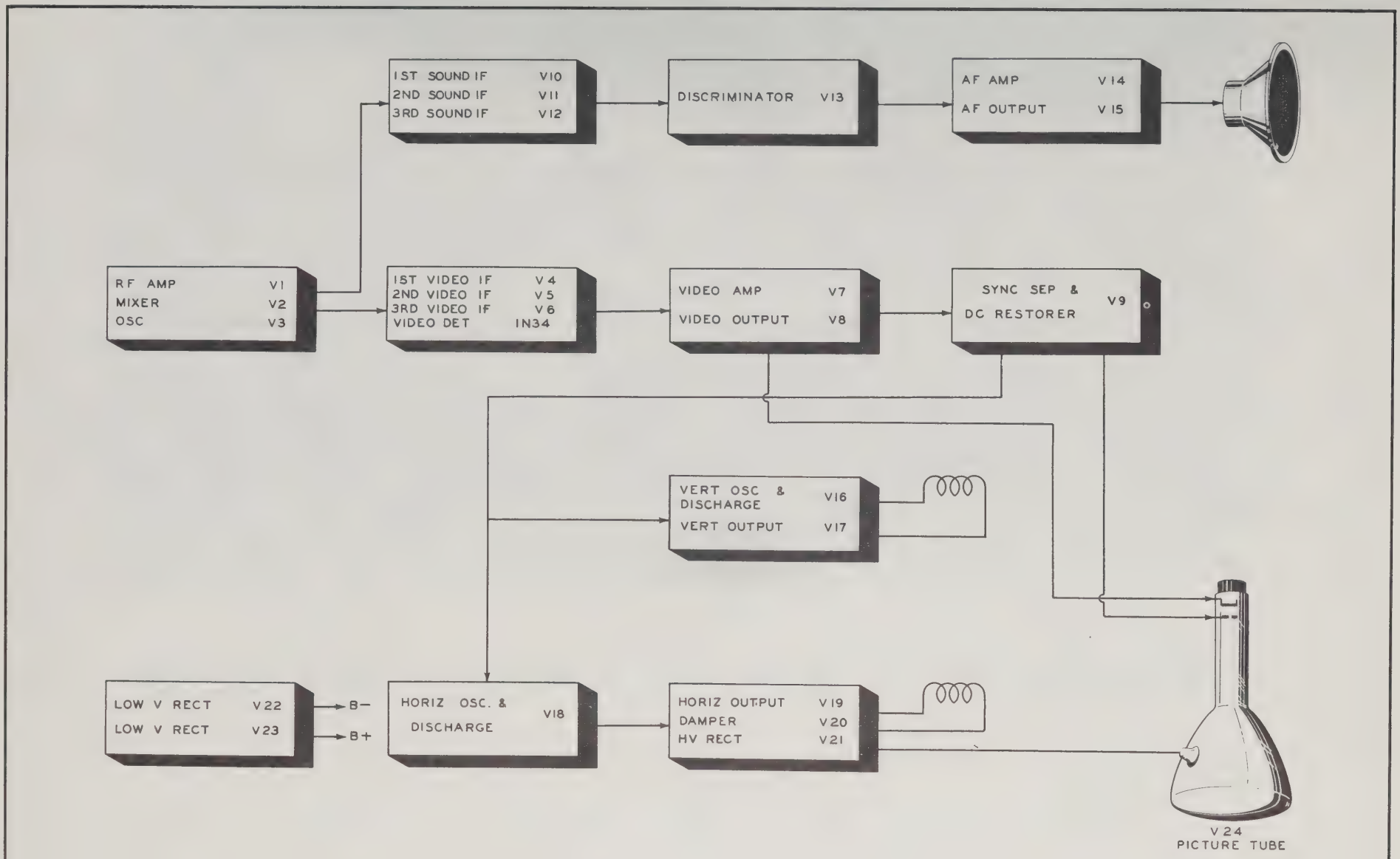
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J6	110VDC	110VDC	6.3VAC	0V.	0V.	0V.	0V.	-	-
2	6J6	85VDC	85VDC	6.3VAC	0V.	0V.	0V.	0V.	-	-
3	6J6	50VDC	50VDC	6.3VAC	0V.	-2.7VDC§	-1.1VDC§	0V.	-	-
4	6AG5	0V.	1.8VDC	6.3VAC	0V.	110VDC	110VDC	1.8VDC	-	-
5	6AG5	0V.	1.5VDC	6.3VAC	0V.	120VDC	120VDC	1.5VDC	-	-
6	6AG5	0V.	2.2VDC	6.3VAC	0V.	95VDC	125VDC	2.2VDC	-	-
7	6AC7	0V.	0V.	0V.	-2.3VDC	.9VDC	190VDC	6.3VAC	250VDC	-
8	6AG7	0V.	0V.	0V.	-.9VDC	0V.	135VDC	6.3VAC	220VDC	-
9	6SN7GT	0V.	60VDC	0V.	0V.	280VDC	16VDC	6.3VAC	0V.	-
10	6AG5	0V.	1.4VDC	6.3VAC	0V.	120VDC	120VDC	1.4VDC	-	-
11	6AG5	0V.	.7VDC	6.3VAC	0V.	70VDC	70VDC	.7VDC	-	-
12	6AG5	0V.	0V.	6.3VAC	0V.	42VDC	42VDC	0V.	-	-
13	6AL5	0V.	0V.	3.8VAC	0V.	0V.	0V.	0V.	-	-
14	6SN7GT	0V.	62VDC	1.7VDC	0V.	63VDC	2VDC	0V.	6.3VAC	-
15	6V6GT	0V.	0V.	270VDC	180VDC	0V.	0V.	6.3VAC	9VDC	-
16	6SN7GT	-75VDC	0V. 170VDC	0V.	-75VDC	275VDC	0V.	6.3VAC	0V.	-
17	6SN7GT	0V.	270VDC 330VDC	4.6VDC 16VDC	0V.	270VDC 330VDC	4.6VDC 16VDC	6.3VAC	0V.	-
18	6SN7GT	-27VDC	90VDC	0V.	-27VDC	195VDC	0V.	6.3VAC	0V.	-
19	6BG6G	0V.	0V.	-65VDC	0V.	-65VDC	-70VDC	6.3VAC	190VDC	†
20	5V4G	0V.	380VDC	320VDC	320VDC	0V.	320VDC	0V.	380VDC	-
21	1B3GT	DO NOT MEASURE.								
22	5V4G	0V.	340VDC	0V.	345VAC	0V.	345VAC	-2.7VDC	340VDC	-
23	5V4G	0V.	340VDC	0V.	345VAC	0V.	345VAC	-70VDC	340VDC	-
24	10FP4	0V.	16VDC	PIN 10 320VDC	PIN 11 32VDC	PIN 12 6.3VAC				

†DO NOT MEASURE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at maximum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CHASSIS TOP VIEW



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st V. IF Amp.	6AG5	6AG5	7BD	
V5	2nd V. IF Amp.	6AG5	6AG5	7BD	
V6	3rd V. IF Amp.	6AG5	6AG5	7BD	
V7	4th V. Amp.	6AG7	6AG7	8N	
V8	2nd V. Amp.	6AG7	6AG7	8Y	
V9	Det., Amp. & 1st Audio	6SN7GT	6SN7GT	8BL	
V10	1st V. IF Amp.	6AG5	6AG5	7BD	
V11	2nd V. IF Amp.	6AG5	6AG5	7BD	
V12	3rd V. IF Amp.	6AG5	6AG5	7BD	
V13	Discriminator	6AL5	6AL5	8BT	
V14	Audio Amp.	6SN7GT	6SN7GT	8BD	
V15	Audio Output	6W6GT	6W6GT	7AC	
V16	Vert. Osc. & Discharge	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6SN7GT	6SN7GT	8BD	
V18	Hor. Osc. & Discharge	6SN7GT	6SN7GT	8BD	
V19	Hor. Output	6BG6G	6BG6G		
V20	Damper	5V4G	5V4G	5L	
V21	H. V. Rectifier	1B3GT	1B3GT		
V22	L. V. Rectifier	5V4G	5V4G	5L	
V23	L. V. Rectifier	5V4G	5V4G	5L	
V24A	Picture Tube	10FP4	10FP4		
	" "	12JP4	12JP4		
	" "	15AP4	15AP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	30	450	34101	GL450/30	KR530	D-TV-30/450		Filter
C2	40	450	34100	GL450/40	KR540	D-TV-40/450		"
C3	2x20	450	28169	AF44J	UP2245	DY-TV-2x20-450	D-13663	"
C4A	80	450	34117	[AF883	UF8045	DY-TV-80/450	TVL-18	
B	20	25		HR525/25	HR202A	"20/25		Vert. Out. Cath. Byp.
C5A	10	450	28192	AF2222J	UP111145	DY-TV-4x10-450	TVL-39	1st V. Amp. Screen Byp.
B	10	450						Low Pass Filter
C	10	450						2nd V. Amp. Screen Byp.
D	10	450						Sync. Amp. Decoup.
E6A	40	450	34136	AF444J4A	UP-22245C	DY-TV-3x20/450+2L/25	TVL-55	■ Filter
B	20	450						▲ "
C	20	25						" Audio Output Cath.
C7	10	50	28186	PR550/10	BR105	M-10-50	TA-510	Sync. Sep. Cathode
C8	4x40	150	34107	PRa4150/40-60	BR4015	M-4x50-150	TA-505	Bias Filter
C9	10	10	34106	PR25/50	BR502	M-50-25	TA-50	"
C10	1		28193					Neutralizing Cer.
C11	1		28193					"
C12	1000		28125					RF Decoupling "
C13	5000		28198					Osc. Decoupling "
C14	25		28183					RF Coupling "
C15	25		28183					" "
C16	8.5		28194					Osc. Feedback "
C17	4.8		28124					" "
C18	1000		28125					Mixer Fil. Bypass "
C19	1000		28198					Mixer Plate Decoup. "
C20	5000	500	CM35A502M					RF Bypass "
C21	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	1st V. IF Cathode "
C22	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	V. Cathode Bypass "
C23	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	1st V. IF Decoup. "
C24	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	RF Bypass "
C25	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	2nd V. IF Cath. "
C26	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	2nd V. IF Decoup. "
C27	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	3rd V. IF Cath. "
C28	5000		28198	146B-005	1D5D6	MW.5-25	1FM-25	3rd V. IF Screen "
C29	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	Bias Filter "
C30	.05	500	CM25A251M	146B-00025	5W8T25	MO.5-325	1FM-325	1st V. Amp. Cath.*
C31	.05	600	28115	P688-05	GT6S5	ST-6-05	TM-15	Video Coupling
C32	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	1st V. Amp. Plate Decoupling "
C33	.1	600	28112	P68B-1	GT6P1	ST-6-1	TM-1	Video Coupling
C34	.05	600	28115	P68B-05	GT6S5	ST-6-05	TM-15	Sync. Coupling
C35	100	500	CM20A101M	146B-0001	5W5T1	MO.5-31	1FM-31	Sync. Filter
C36	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	1st S. IF Cath. "
C37	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	1st S. IF Decoup. "
C38	1000	500	CM35A332M	146B-003	1W5D3	MW.5-23	1FM-23	2nd S. IF Grid Filter
C39	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	2nd S. IF Cath. Cer
C40	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	2nd S. IF Decoup. "
C41	.05		28125	146B-001	1W5D1	MW.5-21	1FM-21	RF Bypass "
C42	.01		27166	146B-00005	5W5A5	MO.5-45	1FM-45	3rd S.IF Grid Filter"
C43	1000		28125	146B-001	1W5D1	MW.5-21	1FM-21	3rd S. IF Decoup. "
C44	.005		27166	146B-00005	5W5A5	MO.5-45	1FM-45	RF Bypass "
C45	500	500	CM30A202M	1467-002	5W5A2	MO.5-42	1FM-42	3rd V. IF Decoup.
C46	.02	600	28116	P68B-02	GT6S2	ST-6-02	TM-12	Audio Coupling
C47	.02	600	28116	P68B-02	GT6S2	ST-6-02	TM-12	" "
C48	.05	600	28115	P68B-05	GT6S5	ST-6-05	TM-15	Feedback Network
C49	.02	600	28116	P68B-02	GT6S2	ST-6-02	TM-12	Audio Coupling
C50	500	500	CM30A502M	1467-003	1W5D3	MW.5-23	1FM-23	Output Plate Bypass
C51	500	500	CM30A502K	1467-005	1D5D5	MW.5-25	1FM-25	Vert. Sync. Coupling
C52	4000	500	CM54A402K	1467-004	1D5D4	MW.5-24	1FM-24	Integrating Network
C53	4.0	500	CM35A402K	1467-004	1D5D4	MW.5-24	1FM-24	Integrating Network
C54	500	500	CM30A502K	1467-005	1D5D5	MW.5-25	1FM-25	Vert. Osc. Grid
C55	.25	600	28115	P68B-05	GT6S5	ST-6-05	TM-15	Vert. Osc. Decoup.
C56	.1	600	28112	P68B-1	GT6P1	ST-6-1	TM-1	Vert. Sweep Coup.
C57	.05	600	28115	P68B-05	GT6S5	ST-6-05	TM-15	Vert. Discharge
C58	5000	500	CM35A502K	1467-005	1D5D5	MW.5-25	1FM-25	Hor. Sync. Coup.
C59	500	500	CM20A501J	146B-0005	5W5T5	MO.5-35	1FM-35	hor. Osc. Grid
C60	.02	600	28116	P68B-02	GT6S2	ST-6-02	TM-12	Hor. Osc. Decoup.
C61	.1	600	28112	P68B-1	GT6S1	ST-6-01	TM-11	Hor. Sweep Coupling
C62	5000	500	CM35A502K	1467-005	1D5D5	MW.5-25	1FM-25	Hor. Discharge

CAPACITORS (CONT.)

C63	.1	400	28113	P488-1	GT4P1	ST-4-1	TM-1	Hor. Out. Cathode
C64	.05	600	28115	P688-05	GT6S5	ST-6-05	TM-15	Hor. Out. Screen
C65	.02	600	28116	P688-02	GT6S2	ST-6-02	TM-12	Damper Filter
C66	.05	600	28115	P688-05	GT6S5	ST-6-05	TM-15	"
C67	500	1600	28199					H. V. Filter
C68	.5	400	18126	484-.5	GT4P5	ST-4-5	TC-5	Sweep Coupling†
C69	.25	600	34135	P688-25	GT6P25	ST-6-25	TC-2	Video Coupling
C70	.02	600	28116	P688-02	GT6S2	ST-6-02	TM-12	Line Filter
C71	.02	600	28116	P688-02	GT6S2	ST-6-02	TM-12	"

*Not used in all models.
†Some models use a 220 resistor (R95) in place of Item C68.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	29456	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	P	Not Req.	Attach to R1A per instructions
R2A	5MΩ	2	29457	D11-133	M-44-Z	Brightness Control
B	Shaft		Not Req.	P	Not Req.	Attach to R2A per instructions
C	Switch		" "	41	SW-A	" "
R3A	25KΩ	½	29458	D11-120	M-40-S	Horiz. Hold Control
B	Shaft		Not Req.	P	Not Req.	Attach to R3A per instructions
R4A	5000Ω	½	29459	D11-114	N-19-S	Contrast Control
B	Shaft		Not Req.	P	Not Req.	Attach to R4A per instructions
R5A	500KΩ	½	29460	D11-133	M-58-S	Vert. Hold Control
B	Shaft		Not Req.	P	Not Req.	Attach to R5A per instructions
R6	1000Ω	25	29464	PR-25-1000	PW 25-1000	Focus Control
R7A	250Ω	½	29463	D11-120	M-40-S	Horizontal Drive Control
B	Shaft		Not Req.	A	Not Req.	Attach to R7A per instructions
R8	2 Meg.	½	29462		M-83-S	Vertical Size Control
R9A	5000Ω	½	29461	D11-114	N-19-S	Vertical Linearity Control
B	Shaft		Not Req.	A	Not Req.	Attach to R9A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES (ALL RESISTORS 10% TOLERANCE UNLESS OTHERWISE STATED)	
R10	150Ω	½		RC20AE151K	Br.-Grn.-Br.	RF Grid
R11	150Ω	½		RC20AE151K	Br.-Grn.-Br.	" "
R12	1500Ω	½		RC20AE152K	Br.-Grn.-Red	Decoupling
R13	100Kz	½		RC20AE104K	Br.-Blk.-Yl.	Osc. Grid
R14	100Kz	½		RC20AE104K	Br.-Blk.-Yl.	" "
R15	4700Ω	½		RC20AE472K	Yl.-Vi.-Red	Osc. Decoupling
R16	220KΩ	½		RC20AE224K	Red-Red-Yl.	Mixer Grid
R17	2MΩ	½		RC20AE205K	Red-Red-Yl.	" "
R18	10KΩ	1	BTA-10K		Br.-Blk.-Or.	Mixer Plate Decoupling
R19	100Ω	½		RC20AE101M	Br.-Blk.-Br.	1st Video IF Cathode
R20	100Ω	½		RC20AE101M	Br.-Blk.-Br.	Video IF Cathode
R21	10KΩ	½		RC20AE103K	Br.-Blk.-Or.	1st Video IF Grid
R22	1200Ω	½	BTS-1200	RC20AE122K	Br.-Red-Red	1st Video IF Decoupling
R23	1200Ω	½	BTS-1200	RC20AE122K	Br.-Red-Red	" " "
R24	100Ω	½		RC20AE101K	Br.-Blk.-Br.	2nd Video IF Cathode
R25	1200Ω	½	BTS-1200	RC20AE122K	Br.-Blk.-Br.	2nd Video IF Decoupling
R26	100Ω	½		RC20AE101K	Br.-Blk.-Br.	2nd Video IF Cathode
R27	39KΩ	½	BTS-39k	RC20AE393K	Or.-White-Or.	Video Amp. Bias Network
R28	1200Ω	½	BTS-1200	RC20AE122K	Br.-Red-Red	Voltage Divider
R29	62KΩ	1		RC30AE623J	Blue-Red-Or.	1st Video Amp. Screen
R30	100Ω	½		RC20AE101M	Br.-Blk.-Br.	1st Video Amp. Cathode-Note 1
R31	1500Ω	½	BTS-1500	RC20AE152M	Br.-Grn.-Red	1st Video Amp. Plate
R32	4700Ω	1	BTA-4700	RC30AE472K	Yl.-Vi.-Red	1st Video Amp. Plate
R33	470KΩ	½		RC20AE474M	Yl.-Vi.-Yl.	2nd Video Amp. Grid
R34	27KΩ	½	BTS-27K	RC20AE273K	Red-Vi.-Or.	Bias Network
R35	600Ω	10	34133	AB-600		"
R36	27KΩ	2		RC40AE273K	Red-Vi.-Or.	2nd Video Amp. Screen
R37	3500Ω	5	28186	AB-3500		2nd Video Amp. Plate
R38	1 Meg.	½	BTS-1 Meg.	RC20AE105K	Br.-Blk.-Grn.	DC Restorer Grid
R39	47KΩ	½	BTS-47K	RC20A5473K	Yl.-Vi.-Or.	DC Restorer Cathode
R40	10KΩ	½	BTS-10K	RC20A5103K	Br.-Blk.-Or.	DC Restorer Plate
R41	22KΩ	½	BTS-22.5K	RC40AE223K	Red-Red-Or.	Sync. Amp. Decoupling
R42	2.2 Meg.	½	BTS-2.2 Meg.	RC20AE225K	Red-Red-Grn.	Bleeder
R43	1500Ω	½	BTS-1500	RC20A5152K	Br.-Grn.-Red	Sync. Amp. Plate
R44	10KΩ	½	BTS-10K	RC20A5103K	Br.-Blk.-Or.	" "
R45	1 Meg.	½	BTS-1 Meg.	RC20A5105K	Br.-Blk.-Grn.	Sync. Amp. Grid
R46	150Ω	½		RC20AE151K	Br.-Grn.-Br.	1st Sound IF Cathode
R47	1200Ω	½		RC40AE122K	Br.-Red-Red	1st Sound IF Decoupling
R48	470KΩ	½	BTS-470K	RC20AE474M	Yl.-Vi.-Yl.	2nd Sound IF Grid
R49	150Ω	½		RC20AE151K	Br.-Grn.-Br.	2nd Sound IF Cathode
R50	10KΩ	½	BTS-10K	RC20A5103K	Br.-Blk.-Or.	2nd Sound IF Decoupling
R51	1200Ω	½	BTS-1200	RC20A5122K	Br.-Red-Red	" " "
R52	33KΩ	1	BTA-33K	RC30AE333K	Or.-Or.-Or.	3rd Sound IF Grid
R53	6800Ω	1	BTA-6800	RC30A5682K	Blue-Gray-Red	3rd Sound IF Bleeder
R54	2KΩ	1	BTS-2-12K	RC40A1202K	Br.-Red-Or.	3rd Sound IF Decoupling
R55	100KΩ	½	BTS-100K +5%	RC20A5104J	Br.-Blk.-Yl.	Disc. Load
R56	100KΩ	½	BTS-100K +5%	RC20AE104J	Br.-Blk.-Yl.	" "
R57	10Ω	½		RC40A5100K	Br.-Blk.-Blk.	Fil. Dropping
R58	47KΩ	½	BTS-47K	RC20A5473K	Yl.-Vi.-Or.	De-emphasis
R59	1000Ω	½	BTS-1000	RC20A5102K	Br.-Blk.-Red	Audio Amp. Cathode
R60	100KΩ	½	BTS-100K	RC20AE104K	Br.-Blk.-Yl.	Feedback Network
R61	47KΩ	½	BTS-47K	RC20A5473K	Yl.-Vi.-Or.	Audio Amp. Plate Load
R62	1000Ω	½	BTS-1000	RC20AE102K	Br.-Blk.-Red	2nd Audio Amp. Cathode
R63	100KΩ	½	BTS-100K	RC20AE104K	Br.-Blk.-Yl.	2nd Audio Amp. Grid
R64	47KΩ	½	BTS-47K	RC20AE473K	Yl.-Vi.-Or.	2nd Audio Amp. Plate Load
R65	330KΩ	½	BTS-330K	RC20AE334M	Or.-Or.-Yl.	Output Coupling
R66	390Ω	½	BTS-390K	RC20A5390K	Or.-White-Br.	Output Cathode
R67	22KΩ	½	BT-3-22K	RC40AE223M	Red-Red-Or.	Filter
R68	100KΩ	½	BTS-100K	RC20AE104K	Br.-Blk.-Yl.	Differentiator Network
R69	10KΩ	½	BTS-10K	RC20A5103K	Br.-Blk.-Or.	Integrator Network
R70	10KΩ	½	BTS-10K	RC20A5103K	Br.-Blk.-Or.	Integrator Network
R71	1 Meg.	½	BTS-1 Meg.	RC20AE105K	Br.-Blk.-Grn.	Vertical Osc. Grid
R72	100KΩ	½	BTS-100K	RC20AE104M	Br.-Blk.-Yl.	Vert. Osc. Decoupling
R73	1 Meg.	½	BTS-1 Meg.	RC20A5105K	Br.-Blk.-Grn.	Vert. Discharge Plate
R74	470KΩ	½	BTS-4700	RC20A5472K	Yl.-Vi.-Red	Peaking
R75	150Ω	½		RC20A5151K	Br.-Grn.-Br.	Vertical Output Cathode
R76	1 Meg.	½	BTS-1 Meg.	RC20A5105K	Br.-Blk.-Grn.	Vertical Output Grid
R77	1500Ω	½	BTS-1500	RC20A5152K	Br.-Grn.-Red	Differentiator
R78	100KΩ	½	BTS-100K	RC20A5104K	Br.-Blk.-Yl.	Horizontal Osc. Decoupling
R79	62KΩ	1		RC30AE623J	Blue-Red-Or.	Horizontal Osc. Grid
R80	470KΩ	½	BTS-470K	RC20A5474M	Yl.-Vi.-Yl.	Horizontal Discharge Plate
R81	1 Meg.	½	BTS-1 Meg.	RC20AE105K	Br.-Blk.-Grn.	Horizontal Output Grid
R82	150Ω	½		RC20A5151K	Br.-Grn.-Br.	Horizontal Output Screen
R83	100Ω	2		RC40AE101K	Br.-Blk.-Br.	Horizontal Output Cathode

RESISTORS (CONT.)

R84	62Ω	2	RC40AE62J		Blue-Red-Red	Horiz. Output Screen Decoup.
R85	3.3Ω	1	34105		Or.-Or.-Gold	Filament Dropping
R86	17KΩ	10	34132			Damper Load (Has Slider)
R87	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Br.-Blk.-Grn.	H. V. Filter
R88	500Ω	20	34103	DG-500		Voltage Divider Bleeder
R89	15KΩ	20	34104	DG-15K		" "
R90	500Ω	20	34103	DG-500		Filter
R91	15KΩ	20	34104	DG-15K		Bleeder
R92	100MΩ	1	RC30A5104M	BTA-100M	Br.-Blk.-Yl.	"
R93	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl.	Picture Tube Cathode
R94	30000Ω	12	34134	DG-3000		Filter
R95	22Ω	½	RC20AE220K		Red-Red-Blk.	Horizontal Centering-Note 2

Note 1-Not used in all models.
Note 2-Some models use Item C68 in place of Item R95. In the event R95 need be replaced, replace with Item C68.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC @ 2.2A	690VAC CT 300MA DC	5VAC 4 A.	5VAC 2 A.	29451			
		SEC. 4 6.3VAC 8.8A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE SEC	RATING: DC RESISTANCE PRI	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T2	6.6Ω	7.9Ω	29442	A-8110	TV24A89	A-3002	Hor. Blocking Osc.
T3	390Ω	70Ω	29443	A-8111	TV24A89	A-3000	Vert. Block. Osc.
T4	8.5Ω	410Ω	29445				
	tapped @ 8.5Ω	tapped @ 190Ω					Hor. Output Trans.
T5	6.9Ω	570Ω	29444	A-8115	TV24A86	A-3035	Vert. Output Trans.
T6A	14Ω		29446	DY-1			Hor. Deflection Yoke
B	68Ω						Vert. Deflection Yoke
T7	850Ω		29446	FC-10			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T8	4700Ω	3.5Ω	250Ω .42	Part of SP1	A-3877 #	T22S8 #	A-2930 #	#Mount on chassis.

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
SP1	FIELD VC 1K2 DC 175	29492 ‡	ST-105 Mod. P8-X	5A15	‡Includes Output Transformer
SP2	CONE DIA. VC 11Ω 4-5/8" 9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
L1	.250A	75Ω	6 Henries	29874				
L2	.048A	270Ω	11 Henries	29230				

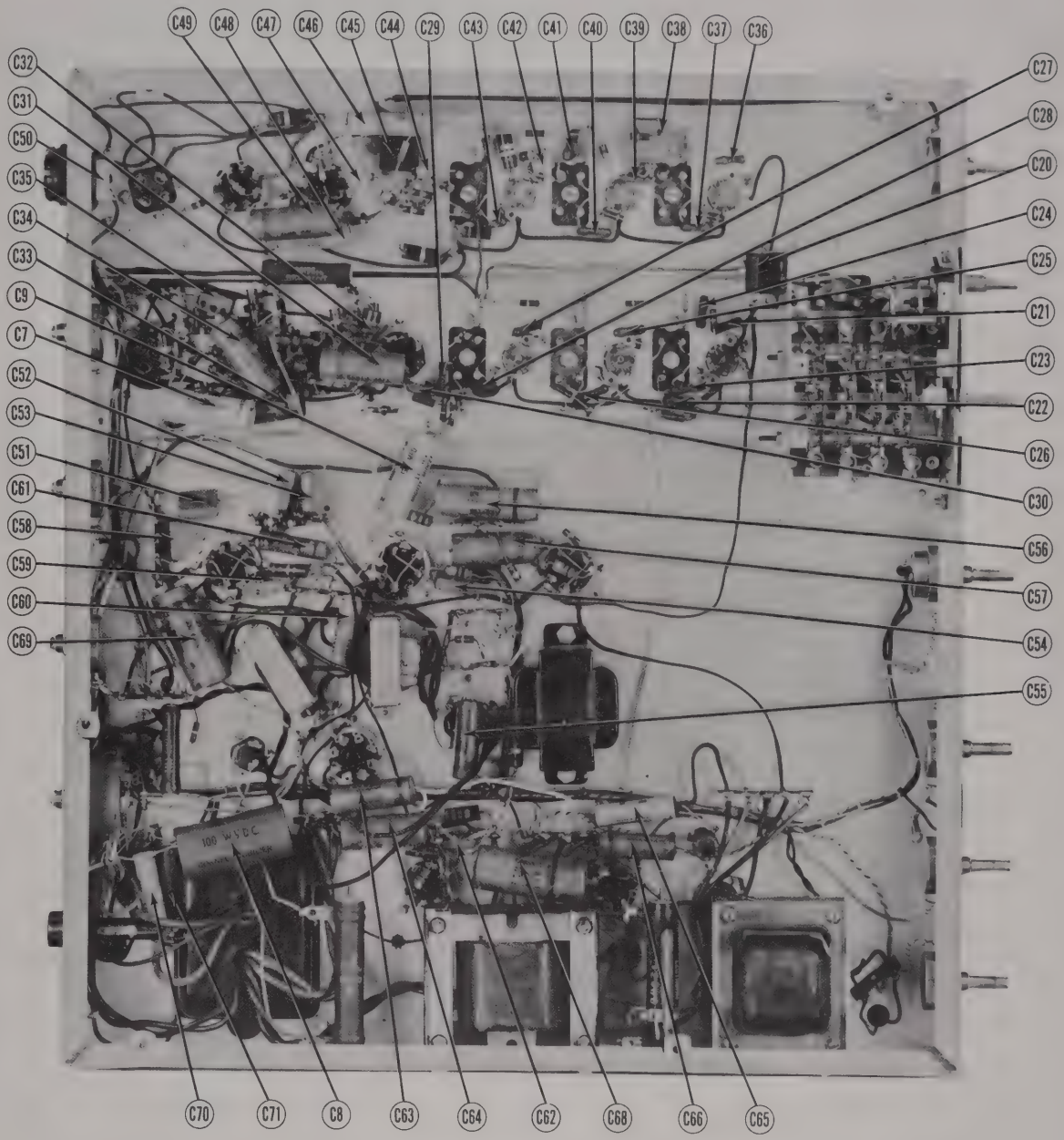
COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: MEISSNER PART No.	NOTES
L3	Ant. Input Coil	.22 CT		05640		
L4	RF Coil	.02		05628		
L5	" "	.02		05629		Item L4, 5, 6 and 7 Channel #13 may be obtained completely assembled under Part Number 05630.
L6	Osc. Coil	.02		05631		
L7	" "	.02		05632		
L8	RF Coil	.02		05633		
L9	" "	.02		05635		Item L8, 9, 10 and 11 Channel #6 may be obtained completely assembled under Part Number 05633.
L10	Osc. Coil	.02		05635		
L11	" "	.02		05627		
L12	IF Trans.	.52	.22	05641		
L13	1st Video IF	.89		05650		
L14	2nd " "	.72		05651		
L15	3rd " "			05652		
L16	Peaking Coil	7Ω		05655		250 Microhenry
L17	"	5.5Ω		05654		125 Microhenry
L18	1st Sound IF	.19		05656		
L19	2nd " "	.19	.19	05656		
L20	Disc. Trans	.1Ω	0Ω	05657		
L21	Hor. Linearity Control	35Ω		29474		

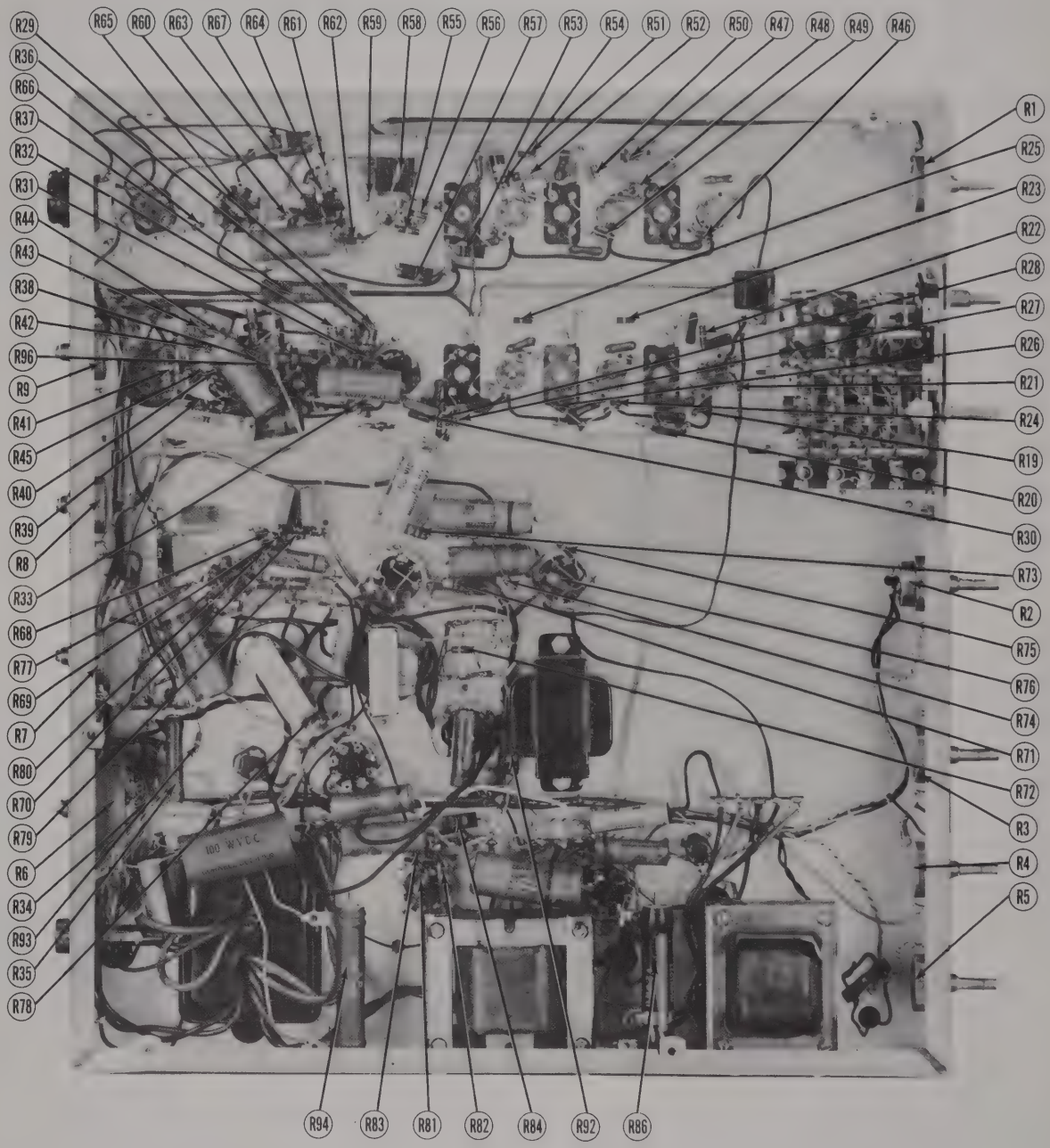
MISCELLANEOUS

ITEM No.	PART NAME	MEISSNER PART No.	NOTES
M1	Tuner Assembly	13-7624	
M2	Switch and Coil Assy.	05637	
M3	Fuse	29276	3 Amp.
M4	Osc. Trimmer Assy.	05726	Fine Tuning Control
	Socket Assembly	05798	Picture Tube
	Plug	29202-A	External Speaker
	Knob	29483	All knob except, Indicator and Fine Tuning
	"	29484	Indicator and Fine Tuning
	Receptacle	29454	AC Power Input
	Sound IF Strip	13-7625	Completely wired with tubes
	Video IF Strip	13-7626	" " " "

MEISSNER MODEL 24TV



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

LINEARITY AND SIZE ADJUSTMENTS

1. Tune receiver to a station which is transmitting a test pattern.(Receiver is tuned to channel 13 at the factory on the channel 12-13 position. If a station on channel 12 is to be received, realign the tuner per instructions on pages 6 and 7.) Adjust vertical and horizontal hold controls for synchronization.

2. Adjust the VERTICAL SIZE control so that the vertical height is approximately 6" on the 10" tube or correspondingly higher on larger tubes.

3. Square up the raster by rotating the DEFLECTION YOKE in its mounting hood. Make certain that the yoke ends up snug against the flaring portion of the kinescope. After setting the deflection yoke, secure with screw and lockwasher to the hood.

4. Set the FOCUS control for the finest possible focus.

5. VERTICAL LINEARITY and VERTICAL SIZE should be adjusted by adjusting the respective controls. Actually each of these controls affect both vertical size and linearity and they must be simultaneously adjusted until both optimum size and optimum linearity are obtained.

6. Center the raster on the screen by manually rotating the axis of the focus coil with respect to the axis of the tube. At this point merely adjust for as good centering as possible. If difficulty is encountered in centering the raster, it may be necessary in some cases to shift the position of the kinescope tube slightly by adding a thin layer of cloth padding to one side of the felt covered mounting block.

7. Adjust the HORIZONTAL DRIVE control for as good horizontal linearity (uniform spacing between vertical lines in the test pattern) as possible. It should be possible to obtain quite good horizontal linearity with this control alone. If the picture becomes distorted or unrecognizable (due to loss of horizontal synchronization), it should be re-synchronized with the HORIZONTAL HOLD control on the front panel.

8. The HORIZONTAL LINEARITY control may be used to obtain fine adjustment of the horizontal linearity, although the total effect obtained will be small. It will have a spreading effect on a narrow vertical strip of the picture, and by adjusting the screw in the Horizontal Linearity Control, this strip where the spreading is effective may be moved horizontally along the picture to the point where best overall horizontal linearity is obtained.

9. The horizontal size (controlled by HORIZONTAL DRIVE and WIDTH controls) and vertical size should be set for the final adjustment so that the horizontal to vertical size ratio is 4 to 3.

10. The final adjustment should be the careful centering of the picture before locking the focus coil in position.

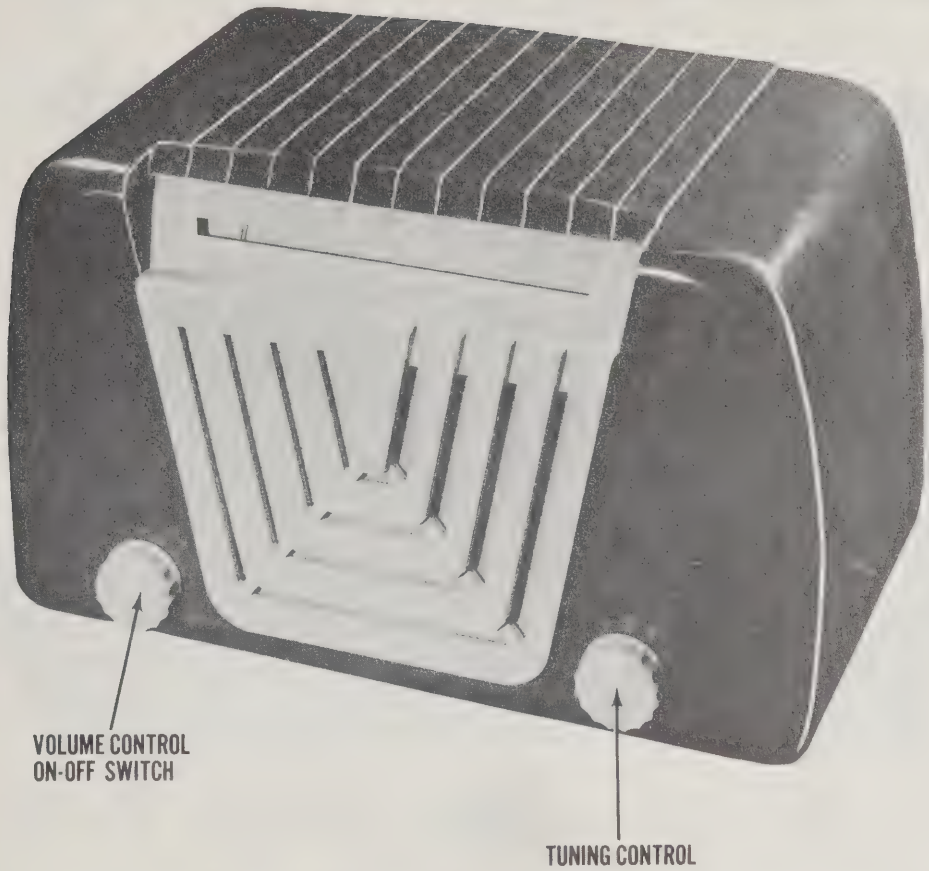
PRODUCTION CHANGES

Some of the early production units had the cathode of the video amplifier (V7) connected directly to chassis. On later units a 100Ω resister bypassed by a 250 MMF capacitor was added to obtain some additional bias on this stage. These parts should be added to those units where they were not originally used.

Also some of these units have a 22Ω resistor in series with one lead of the horizontal deflection coil. This resistor was replaced with a .5 MFD-400V capacitor in later units to provide better linearity. The impedance of this capacitor is approximately 22Ω at the horizontal scanning frequency. The resistor should be replaced with the capacitor on those units where the resistor was used.

The width adjustment coil was not used on some of the early production units.

MOTOROLA MODELS 68X11, 68X12 (Ch. HS-127), 68X11A, 68X12A (Ch. HS-127A)



MOTOROLA MODELS 68X11, 68X12 (Ch. HS-127), 68X11A, 68X12A (Ch. HS-127A)

MOTOROLA MODEL 68X11

TRADE NAME	Motorola, Models 68X11, 68X12(Ch. HS-127), 68X11A, 68X12A(Ch. HS-127A).
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 14C7 RF Amp., 14Q7 Converter, 14A7/12B7 IF Amp., 14B6 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 14Q7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil.	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	.1MFD	High side to pin 6 (Grid) of 14C7. Low side to B-.	455KC	"	"	A5	Adjust for minimum output.
3.		Loop	1620KC	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	1400KC	Tune for maximum output.	"	A7	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14C7	14C7	8V	
2	Converter	14Q7	14Q7	8AL	
3	IF Amp.	14A7/12B7	14A7/12B7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35A5	35A5	6AA	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	23B75808	PRSA150/40-20	EZ42215	DSB-403020-150	TA-240	Filter
B	20	150		PRS150-20			UT-201	"
C	20	150						Decoupling
8	.05	400	8S9816	484-05	GT4S1	ST-4-05	TC-15	Line Filter
9	.15	200	8A2686	484-15	GT4P2	ST-4-2	72P3	Line Isolation
10	.08	200	8A485135	484-075	GT2P1	ST-2-1	72P2	" " See Note
11	.02	400	8S9802	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
12	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
14	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	IF Decoupling
15	.25	100	8S9810	484-25	GT2P25	ST-2-25	TC-2	Bias Filter
16	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
17	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	" "
18	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
19	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter
20	250	500	21R6648	1468-00025	5W5T25	MO.5-325	1FM-325	" " "
21	100	500	21R6641	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling
22	100	500	21R6641	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling See Note

Note: Used in chassis # HS127A.

CONTROLS

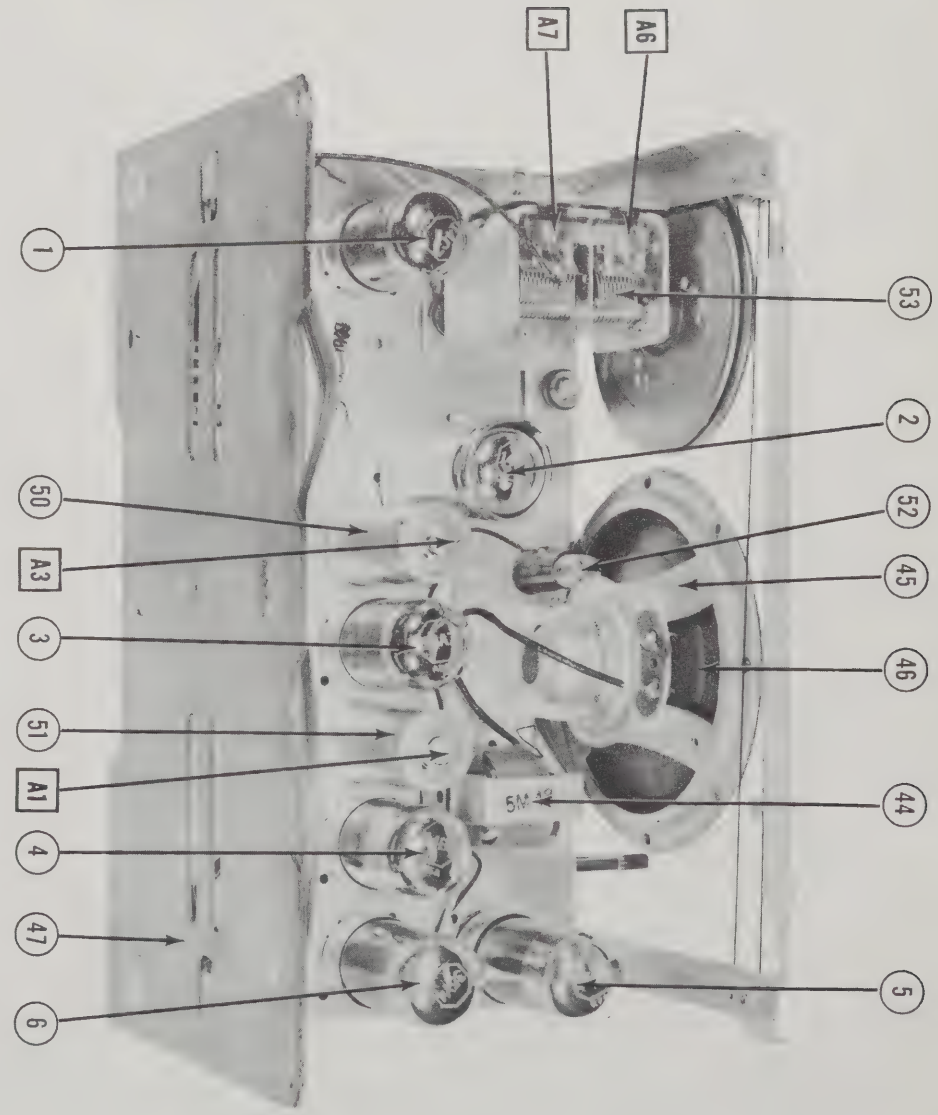
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	½	18A76191	D17-133X	AT-81	Volume Control Tapped @ 25KΩ.
B	Shaft		Not Req.	E	KSS-3	Attach to 23A per Instructions.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES	
24	1 Meg	½	6R6004	BTS-1 Meg	Br.-Blk.-Grn.	RF Grid See Note
25	10KΩ	½	6R6054	BTS-10K	Br.-Blk.-Or.	RF Plate Load
26	1 Meg	½	6R6004	BTS-1 Meg	Br.-Blk.-Grn.	AVC Network
27	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	Converter Grid
28	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	Oscillator Grid
29	4.7 Meg	½	6R2122	BTS-4.7 Meg	Yl.-Vi.-Grn.	" "
30	2.2 Meg	½	6R3927	BTS-2.2 Meg	Red-Red-Grn.	AVC Network
31	1 Meg	½	6R6004	BTS-1 Meg	Br.-Blk.-Grn.	" "
32	220Ω	½	6R3933	BW-½-220	Red-Red-Br.	IF Decoupling
33	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or.	Diode Filter
34	100Ω	½	6R6326	BW-½-100	Br.-Blk.-Br.	AF Cathode
35	3.3 Meg	½	6R2118	BTS-3.3 Meg	Or.-Or.-Grn.	AF Grid
36	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl.	AF Plate Load
37	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl.	Output Grid
38	150Ω	½	6R6373	BW-½-150	Br.-Grn.-Br.	Output Cathode
39	120Ω	½	6R6393	BTS-120C	Br.-Red-Red	Feedback
40	1200Ω	½	6R6393	BTS-1200	Br.-Red-Red	"
41	1200Ω	1	6R5770	BTA-1200	Br.-Red-Red	Filter
42	220Ω	1	6R6389	BW-1-220	Red-Red-Br.	"
43	27Ω	½	6R5683		Red-Vi.-Blk.	Surge Limiter

Note: Used in Ch. HS-127A Only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
44	2650Ω	3.8Ω	260Ω	.8Ω	25B76117	A-3876‡	T22845‡	A-2928‡	‡ Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
45	FIELD	VC IMP.	50B76196	ST-105 ‡ MOD. P5-X	5A07 ‡	‡ Fabricate new mounting bracket.
	PM	3.8Ω				
	CONE DIA.	VC DIA.				
46	4-3/4"	9/16"				

R F COILS

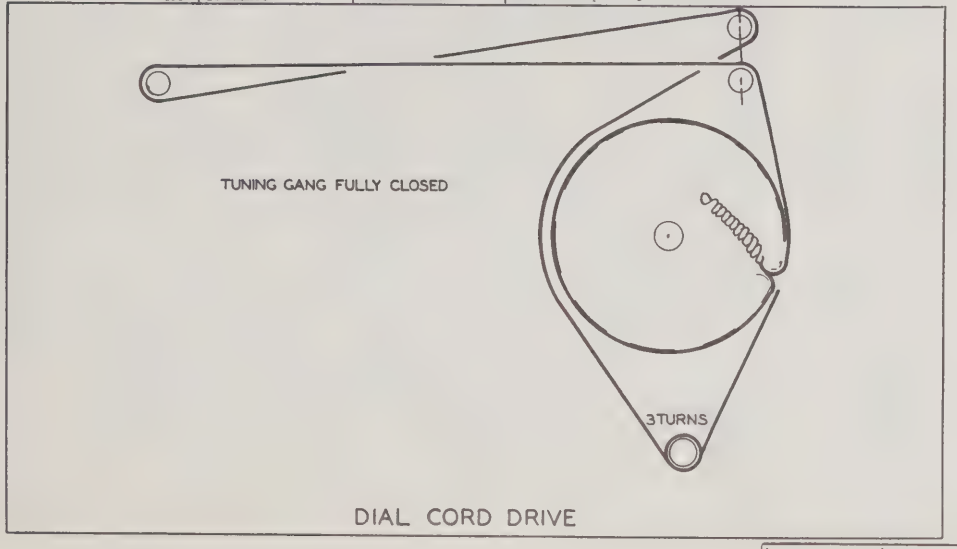
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.
47	Loop Ant.		2Ω	24K77323	
48	Wave trap		63Ω	24A77336	
49	Osc. Coil	1.5Ω	9Ω	24A76192	
50	Input IF	15Ω	15Ω	24B470038	
51	Output IF	13Ω	13Ω	24B75487	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
52	Bayonet	6-8	0.15A	Brown	65X11854		Type 47.

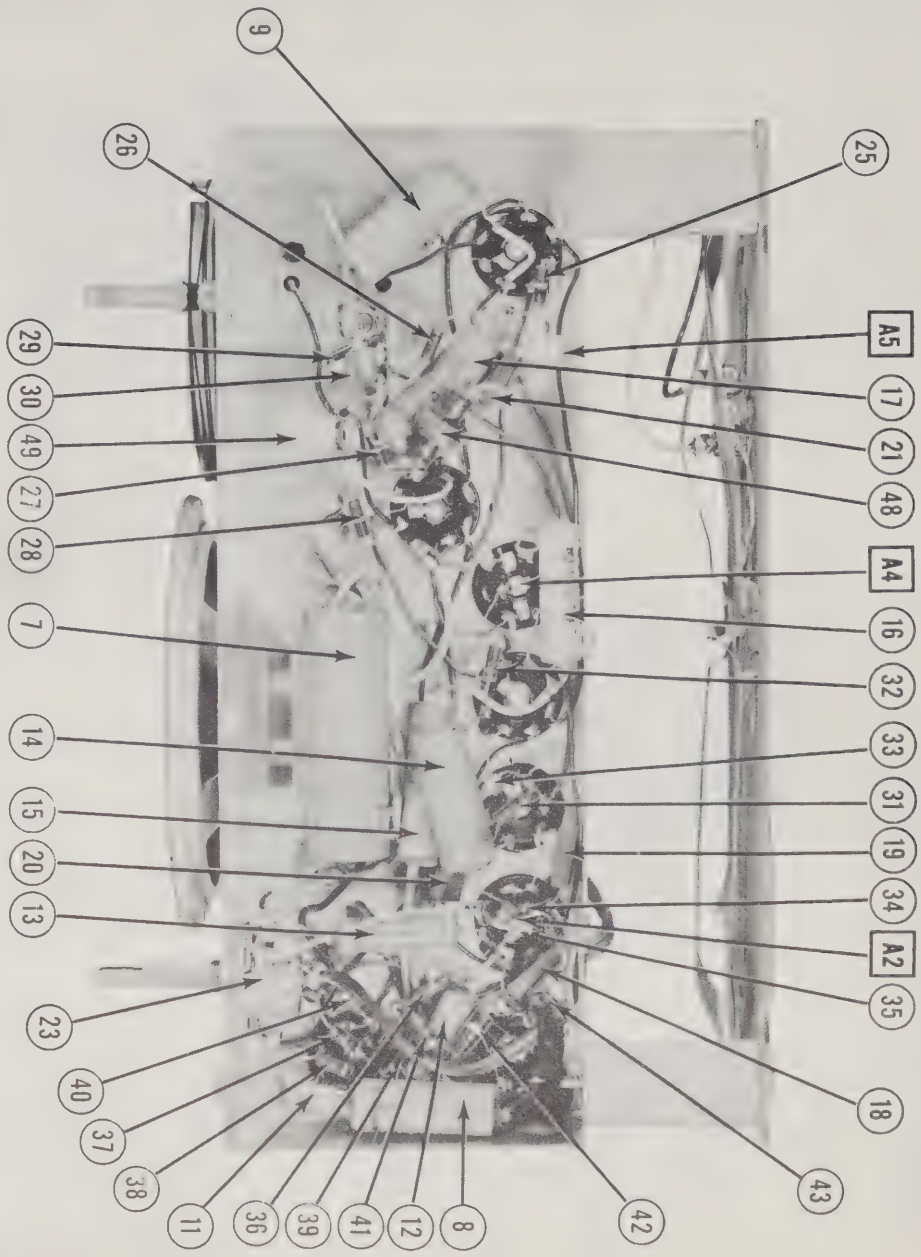
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
53	2 Gang Var. Cap	1X77339	(30-452MMF, 35-197MMF)
A5	Trimmer	20A26941	Wave Trap Adj.



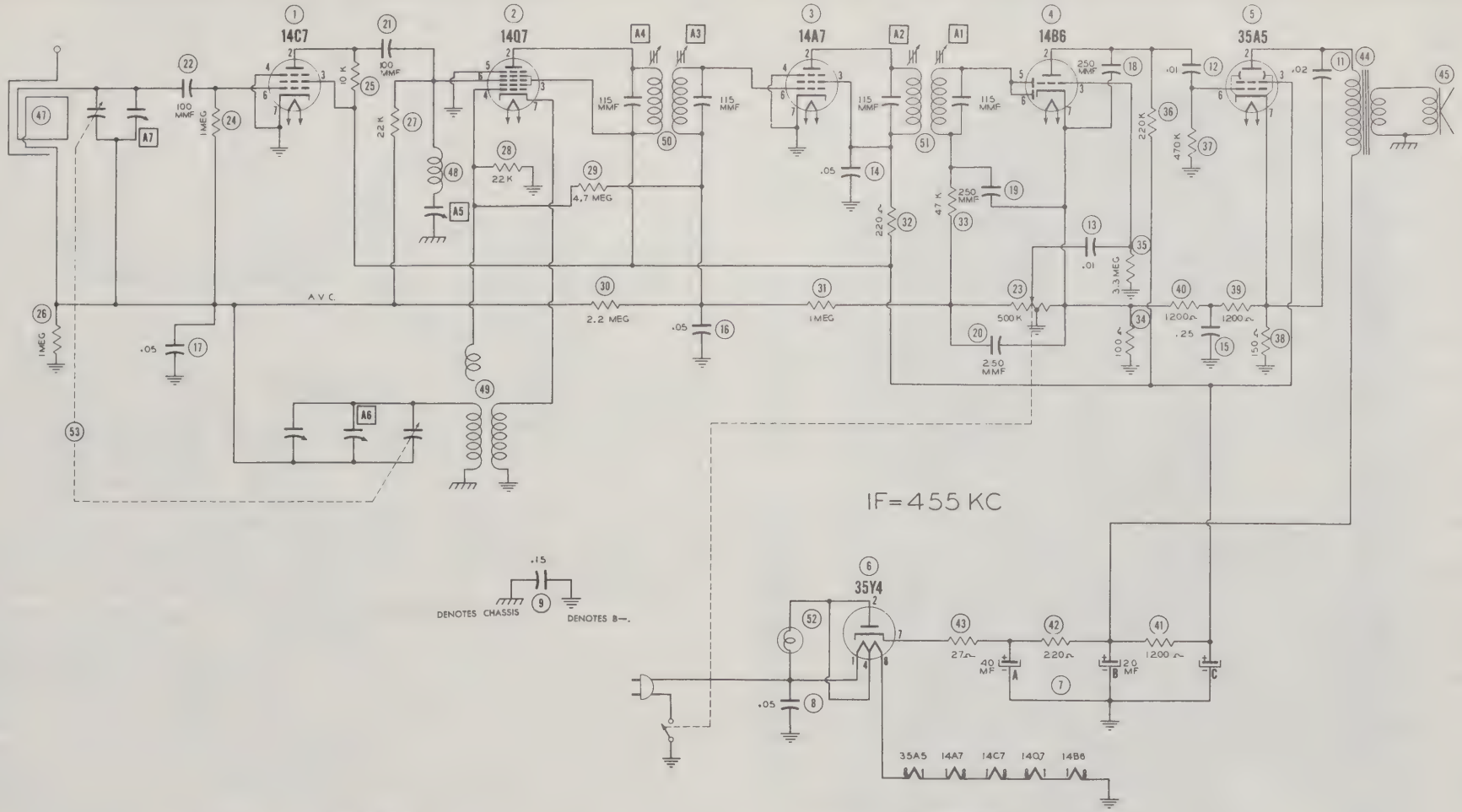
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MOTOROLA MODELS 66X11, 66X12 (Ch. HS-127), 66X11A, 66X12A (Ch. HS-127A)

MOTOROLA MODELS 66X11, 66X12 (Ch. HS-127), 66X11A, 66X12A (Ch. HS-127A)



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14C7	42VAC	30VDC	75VDC	0V.	0V.	-.4VDC	0V.	28VAC
2	14Q7	14VAC	60VDC	75VDC	-6.4VDC§	0V.	-.4VDC	0V.	28VAC
3	14A7	55VAC	85VDC	75VDC	0V.	0V.	-.6VDC	0V.	42VAC
4	14B6	14VAC	50VDC	-.6VDC	0V.	-1.6VDC	-1.6VDC	.2VDC	0V.
5	35A5	55VAC	100VDC	75VDC	75VDC	1.2VDC	0V.	4.3VDC	90VAC
6	35Y4	117VAC	113VAC	110VDC	113VAC	0V.	120VDC	120VDC	90VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14C7	3Ω	110KΩ	100KΩ	0Ω	INF.	1 Meg.	0Ω	3Ω
2	14Q7	12Ω	100KΩ	100KΩ	22KΩ	0Ω	1 Meg.	1.5Ω	.5Ω
3	14A7	52Ω	330KΩ	330KΩ	0Ω	INF.	3.2 Meg.	0Ω	3Ω
4	14B6	12Ω	330KΩ	3.3 Meg.	100Ω	4.2 Meg.	4.2 Meg.	100Ω	0Ω
5	35A5	52Ω	100KΩ	100KΩ	100KΩ	700Ω	470KΩ	150Ω	85Ω
6	35Y4	110Ω	100Ω	100KΩ	.00Ω	INF.	100KΩ	100KΩ	85Ω

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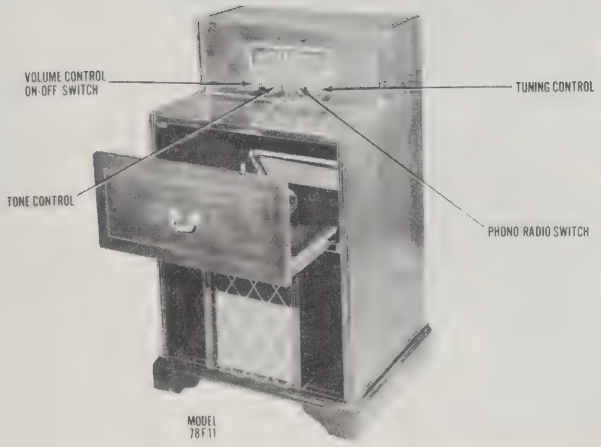
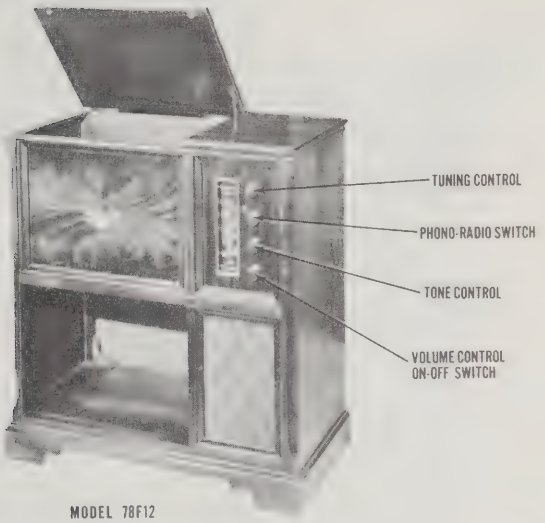
494-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODELS 78F11, 78F11M (Ch. HS-150), 78F12M (Ch. HS-155)



MODEL 78F11



MODEL 78F12

MOTOROLA MODEL 78F11

TRADE NAME	Motorola, Models 78F11, 78F11M (Ch. HS-150), 78F12M(Ch. HS-155)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 12SQ7 Det.-AVC-AF, (2) 50L6GT Power Output.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .39 Amp., @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil.	A1,A2 A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for maximum output.	"	A6,A7	Adjust for maximum output.

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DATE 2/49-#494-17 SET #56 - FOLDER-#17

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODELS 78F11, 78F11M (Ch. HS-150), 78F12M (Ch. HS-155)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	50L6GT	50L6GT	7AC	
6	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	125	150	23B482811					◓ Filter
B	125	150						■ "
C	40	150						▲ "
D	100	25						Filter
8	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	Line Filter
9	.15	400	1A77283	484-.15*	GT4P2*	ST-4-2*	72P3	Line Isolation
10	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
11	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" " "
12	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
14	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	" "
15	.005	600	8S9813	684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
16	.02	100	8K471628	484-02	GT2S2	ST-4-02	TC-12	" "
17	.05	100	8A71213	484-05	GT2S5	ST-4-05	TC-15	Bias Filter
18	.1	400	8S9807	484-1	GT4P1	ST-4-1	TC-1	Phono Isolation
19	.1	400	8S9807	484-1	GT4P1	ST-4-1	TC-1	RF Bypass Power Supply
20	.05	100	8A71213	484-05	GT2S5	ST-4-05	TC-15	IF Grid Filter
21	.1	400	8S9807	484-1	GT4P1	ST-4-1	TC-1	AVC Filter
22	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	Hash Filter
23	250	500	21K77375	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass Cer.
24A	100	300	†	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter Cer.
B	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
25	250	300	‡	1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation Cer.
26	100	500	21R6641	1469-0001	5R5T1	MOS.5-31	MS-31	Fixed Trimmer.

* Wind same number of turns of wire around replacement as were on original.
† Item numbers 24A,B, and 35 are combined into one unit, Part # 21A473040.
‡ Item numbers 25 and 43 are combined into one unit, Part # 21K481868.

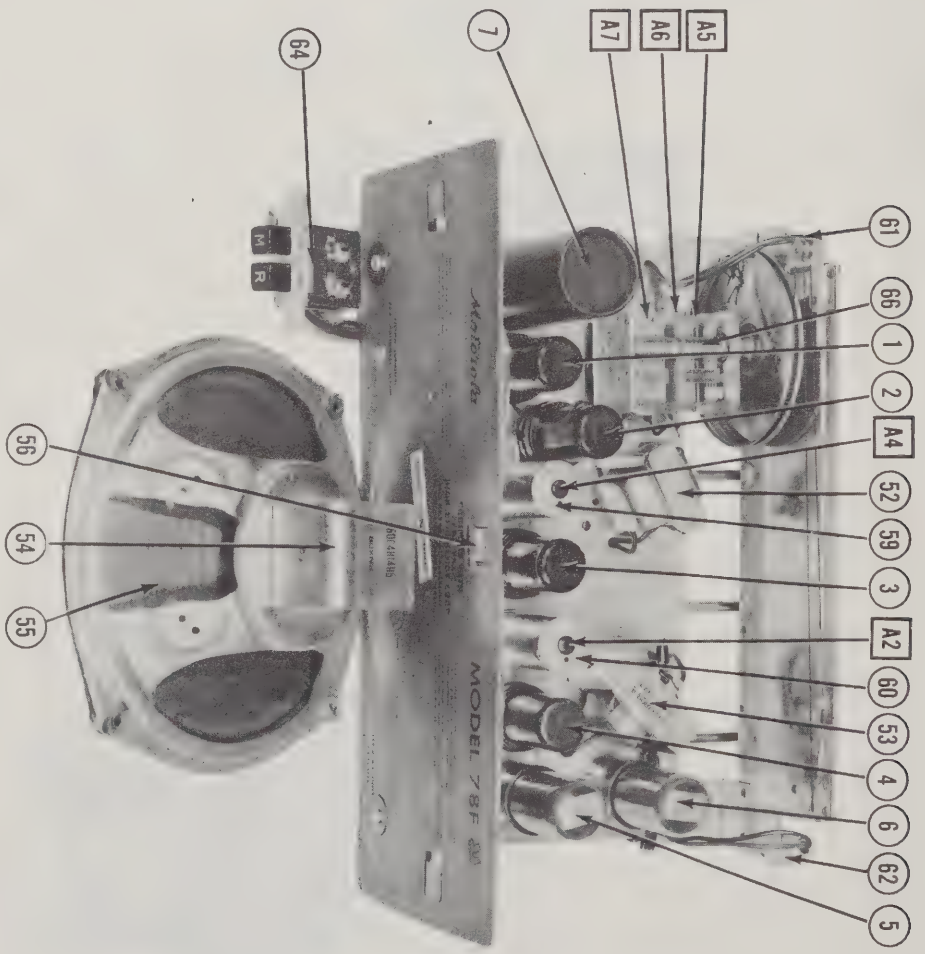
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	1 Meg	½	18K471518	D13-137X	AT-98	Volume Control Tapped @ 300K
B	Shaft		Not Req.	E	KSS-3	Attach to 27A. per Instructions.
C	Switch		" "	41	SW-A	" " " " "
28A	1 Meg	½	18K484386		AM-61-S	Tone Control
B	Shaft		Not Req.		KSS-3	Attach to 28A per Instructions.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES	
29	470Ω	½	6R3949	BTS-470	Yl.-Vi.-Br.	RF Plate
30	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	Oscillator Grid
31	220Ω	½	6R3933	BW-½-220	Red-Red-Br.	Parasitic Suppressor
32	2.2 Meg	½	6R3927	BTS-2.2 Meg	Red-Red-Grn.	IF Grid
33	68Ω	½	6R6007	BW-½-68	Blue-Gray-Blk.	IF Cathode
34	2.2 Meg	½	6R3927	BTS-2.2 Meg	Red-Red-Grn.	AVC Network
35	47KΩ	½	†	BTS-47K	Yl.-Vi.-Or.	Diode Filter
36	2.2 Meg	½	6R3927	BTS-2.2 Meg	Red-Red-Grn.	Diode Load
37	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or.	Tone Compensation
38	2.2 Meg	½	6R3927	BTS-2.2 Meg	Red-Red-Grn.	AF Grid
39	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl.	AF Plate Load
40	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl.	Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.		
41	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl.	Output Grid
42	150Ω	1	6R6330	BW-1-150	Br.-Grn.-Br.	AF Voltage Divider Network
43	470KΩ	‡	‡	BTS-470K	Yl.-Vi.-Yl.	Phono Tone Comp.
44	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	Phono. Isolation
45	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl.	Bias Network
46	12Ω	½	6R2030	BW-½-12	Br.-Red.-Blk.	" "
47	56Ω	½	6R5614	BW-½-56	Grn.-Blue-Blk.	" "
48	270Ω	1	6R6336	BW-1-270	Red-Vi.-Br.	Filter
49	560Ω	5	17K484399	AB-600		"
50	27Ω	2	6R3994	BW-2-27	Red-Vi.-Blk.	Surge Limiter
51	150KΩ	½	6R6182	BTS-150K	Br.-Grn.-Yl.	Line Isolation

† Items no. 35,24A and B are combined into one unit.
‡ Items no. 43 and 25 are combined into one unit.

TRANSFORMER FILAMENT

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
52	117VAC @ .12A	6.7VAC @ 1.5A			25B482810	P-6134 #	T21F08	

Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
53	1200Ω 1200Ω	3.7Ω	51Ω 213Ω	.3Ω	25B482808				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-115		
54	PM	3.7Ω	50C680010	MOD.P8-V	8A21	
	CONE DIA.	VC. DIA.				
55	7-1/4"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
56	Loop Ant.	0Ω	2.5Ω	24K484516		
57	RF Coil	3Ω	10.6Ω	24B484512		
58	Osc. Coil	1Ω	9Ω	24B484511	14-1060 $	$ Add 50 MMF from tuning cap. stator to junction of resistors 30 and 31.
59	Input IF	16Ω	15.5	24B482863	16-6678	
60	Output IF	15Ω	15Ω	24B482865	16-6678	

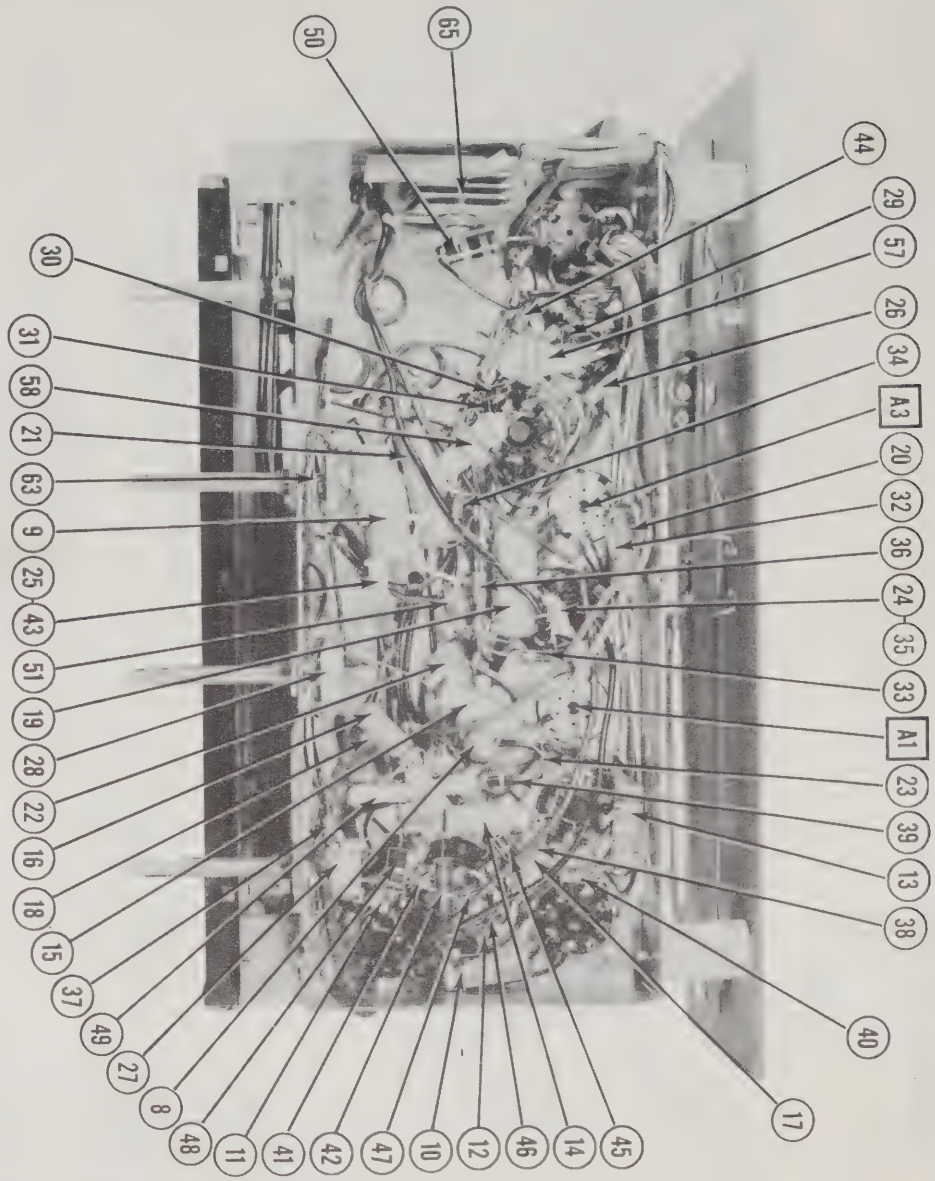
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
61	Bayonet	6-8V	0.15A	Brown	65X11854		Type #47.
62	"	6-8V	0.15A	"	65X11854		" "

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
63	Switch	40A484381	Radio-Phono.
64	"	40K471447	Motor-Reject
65	Rectifier	48B482807	Selenium (150MA).
66	3 Gang Var. Cap.	1X484546	(31-424MMF, 17-215MMF, 13-85MMF).
	Dial Scale	34C484382	Glass (Ch. HS-150).
	" "	34C484517	Glass (Ch. HS-155).
	Dial Pointer	52B481704	
	Cabinet	16K482799	Model 78F11
	"	16K481718	Model 78F11M
	"	16F481758	Model 78F12M

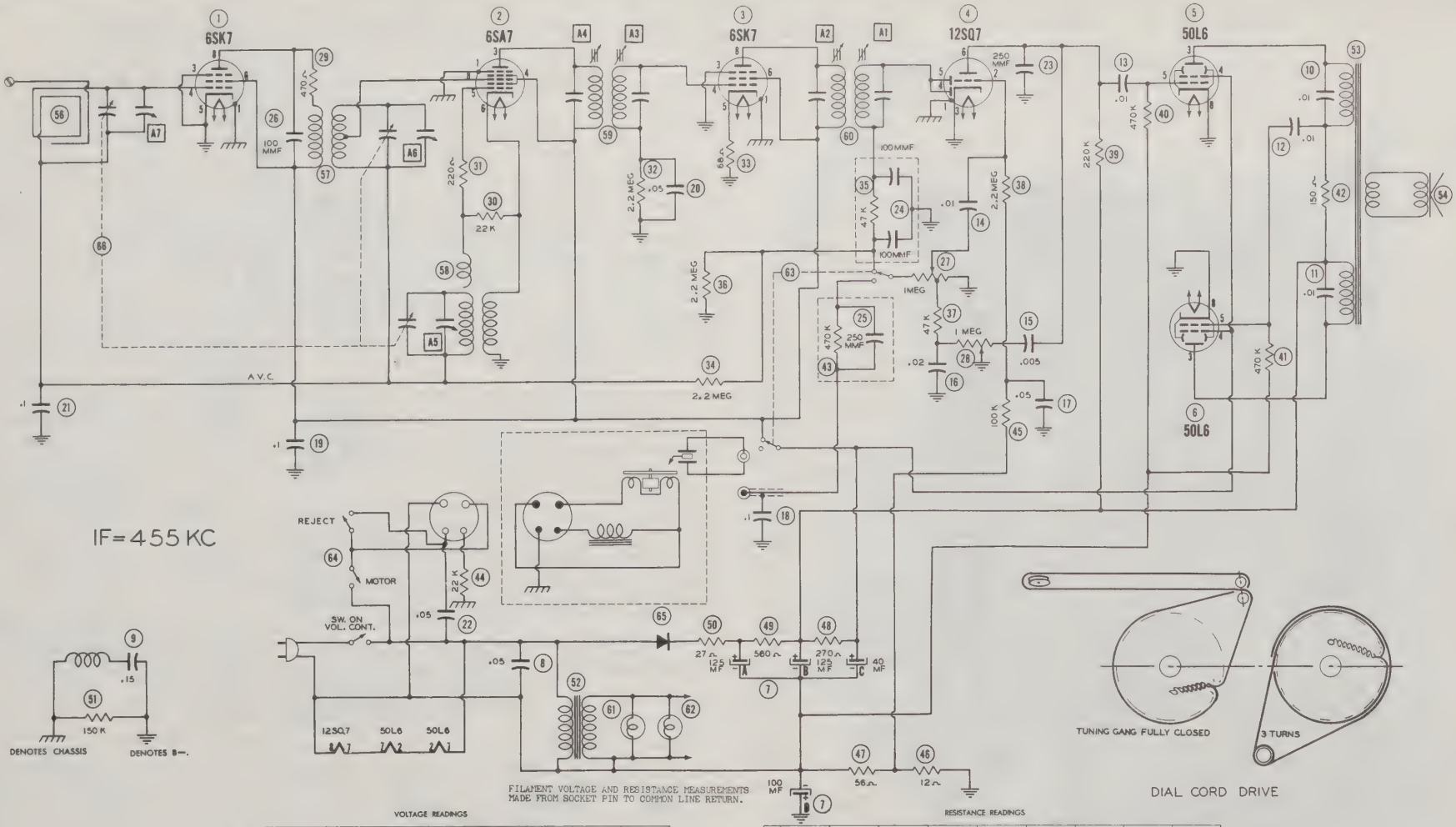
CHASSIS—BOTTOM VIEW



DATE 2/49-#494-17 SET #56 - FOLDER-#17

MOTOROLA MODELS 78F11, 78F11M (Ch. HS-150), 78F12M (Ch. HS-155)

MOTOROLA MODELS 78F11, 78F11M (Ch. HS-150), 78F12M (Ch. HS-155)



FILAMENT VOLTAGE AND RESISTANCE MEASUREMENTS MADE FROM SOCKET PIN TO COMMON LINE RETURN.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	-.1VDC	0V.	0V.	-.5VDC	0V.	75VDC	6.3VAC	70VDC
2	6SA7	-.1VDC	6.3VAC	75VDC	75VDC	-4.7VDC§	0V.	0V.	-.5VDC
3	6SK7	-.1VDC	6.3VAC	0V.	0V.	.9VDC	75VDC	0V.	75VDC
4	6SQ7	-.1VDC	-.5VDC	0V.	-.4VDC	-.4VDC	65VDC	12VAC	0V.
5	50L6GT	0V.	64VAC	77VDC	75VDC	-1.8VDC	-5.8VDC	12VAC	0V.
6	50L6GT	80VDC	64VAC	77VDC	75VDC	-1.8VDC	-5.8VDC	117VAC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	150KΩ	0Ω	0Ω	2.5 Meg.	0Ω	30KΩ	.1Ω	30KΩ
2	6SA7	150KΩ	.1Ω	30KΩ	30KΩ	22KΩ	1Ω	0Ω	2.5 Meg.
3	6SK7	150KΩ	.1Ω	0Ω	2.2 Meg.	68Ω	30KΩ	0Ω	30KΩ
4	6SQ7	150KΩ	2.3 Meg.	0Ω	350KΩ	350KΩ	250KΩ	18Ω	0Ω
5	50L6GT	INF.	50Ω	30KΩ	30KΩ	470KΩ	66Ω	18Ω	0Ω
6	50L6GT	30KΩ	90Ω	30KΩ	30KΩ	470KΩ	66Ω	110Ω	0Ω

RADIO-PHONO SWITCH IN RADIO POSITION.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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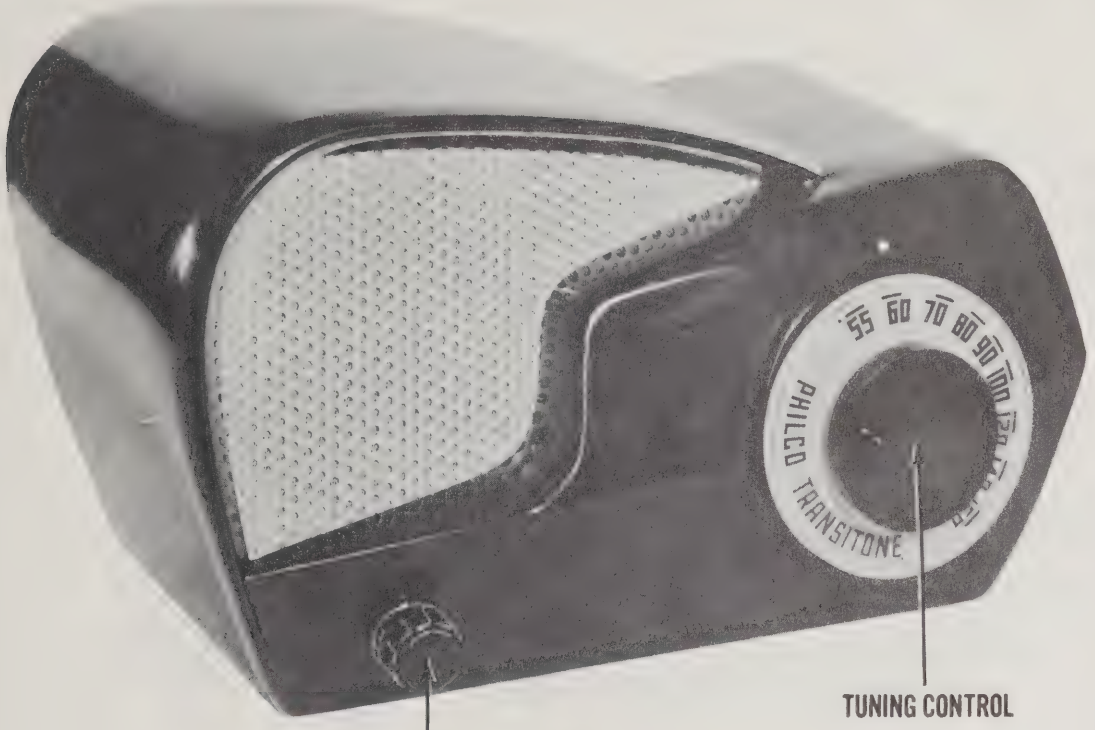
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO
MODELS 49-501, 49-501-I

PHILCO
MODELS 49-501, 49-501-I

PHILCO MODEL 49-501

TRADE NAME	Philco, Models 49-501, 49-501-I
MANUFACTURER	Philco Corp.. Tioga & "C" Sts., Philadelphia, Pennsylvania
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 7A8 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 of 7A8. Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil.	A1,A2 A3,A4	Adjust for maximum output. If isolation transformer is not used reduce to dummy antenna to .001 MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning cap. fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 49-501

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	7A8	7A8	8U	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	30-2575-10	PRSA150/20-30	EZ42215	DSB403020-150	TA-303	Filter Orange
B	25	150		PRS150/24				Filter Blue
C	20	150						Filter Red
7	.04	400	30-4119	484-05	GT6S4	MPH-4-05	TC-14	Line Filter
8	.2	400	30-4644	484-2	GT2P25	ST-4-2	72P3	Line Isolation
9	.02	400	30-4599	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	"
12	.05	200	30-4519	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
13	.05	200	30-4519	484-05	GT4S5	ST-4-05	TC-15	IF Screen Bypass
14	330	300	60-10335407	1468-0003	5W5T3	MO.5-33	1FM-33	RF Bypass Cer.
15	47	500	30-1224-2	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Capacitor
16	5	300	30-1223	1468-000005	5W5V5	MO.5-55	MS-55	Ext. Ant. Coupling Cer.

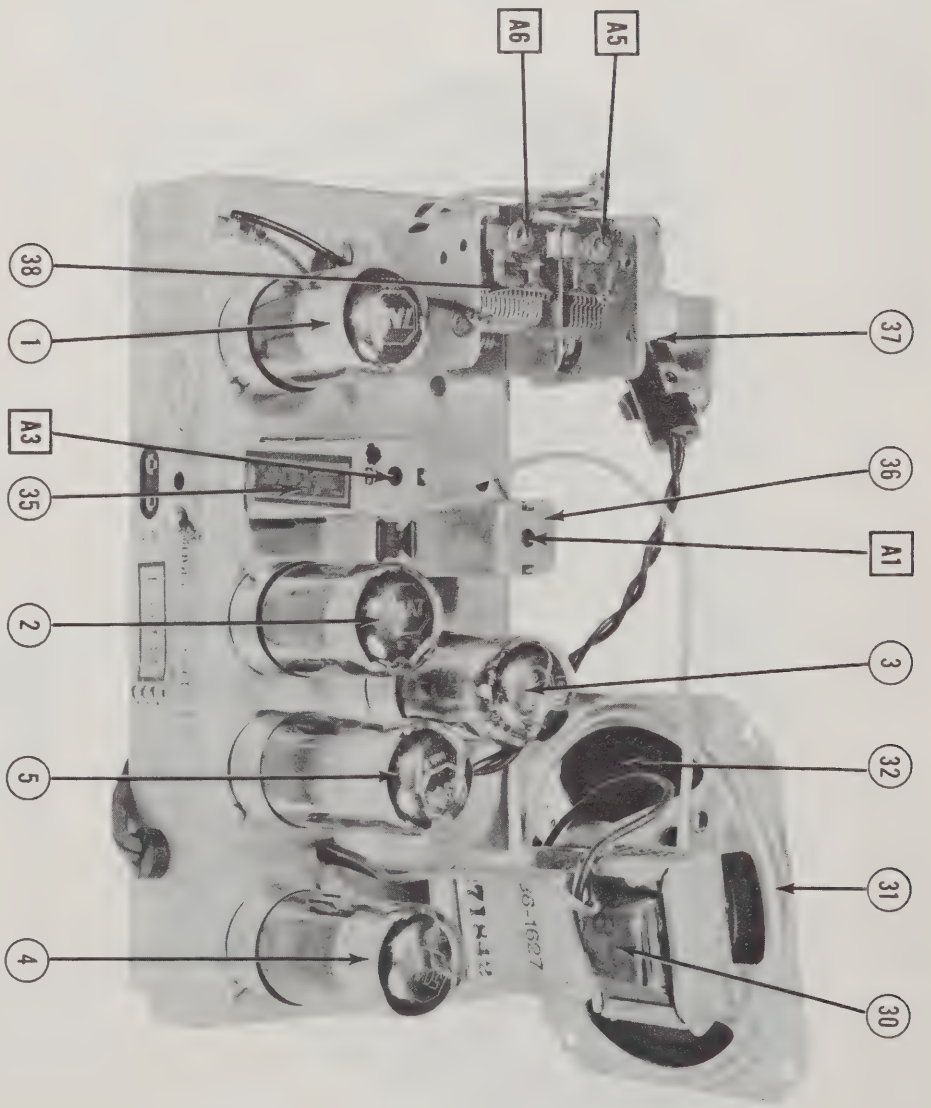
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	½	45-5019	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 17A per Instructions.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES	
18	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl.	Antenna Loading
19	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl.	Oscillator Grid
20	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or.	Screen Dropping
21	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or.	Diode Filter
22	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
23	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn.	AF Grid
24	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl.	AF Plate Load
25	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl.	Output Grid
26	130Ω	½	66-1123340	BW-½-150	Br.-Or.-Br.	Output Cathode
27	1200Ω	½	66-2123340	BTS-1200	Br.-Red-Red	Filter
28	220Ω	1	66-1224340	BW-1-220	Red-Red-Br.	Filter
29	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl.	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
30	1760Ω	3.45Ω	205Ω	.7Ω	Part of 36-1627	A-3876#	T22S45#	A-2928#	# Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-113 †		
31	PM	3.45Ω	36-1627	MOD. P4-X	4A07†	† Drill and tap magnet frame.
	CONE DIA.	VC. DIA.				
32	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
33	Loop Ant.		2.5Ω	32-4052-19		
34	Osc. Coil	2Ω	6.5Ω	32-4263		
35	Input IF	19Ω	19Ω	32-4160-6	16-6678	
36	Output IF	15Ω	14Ω	32-4240		

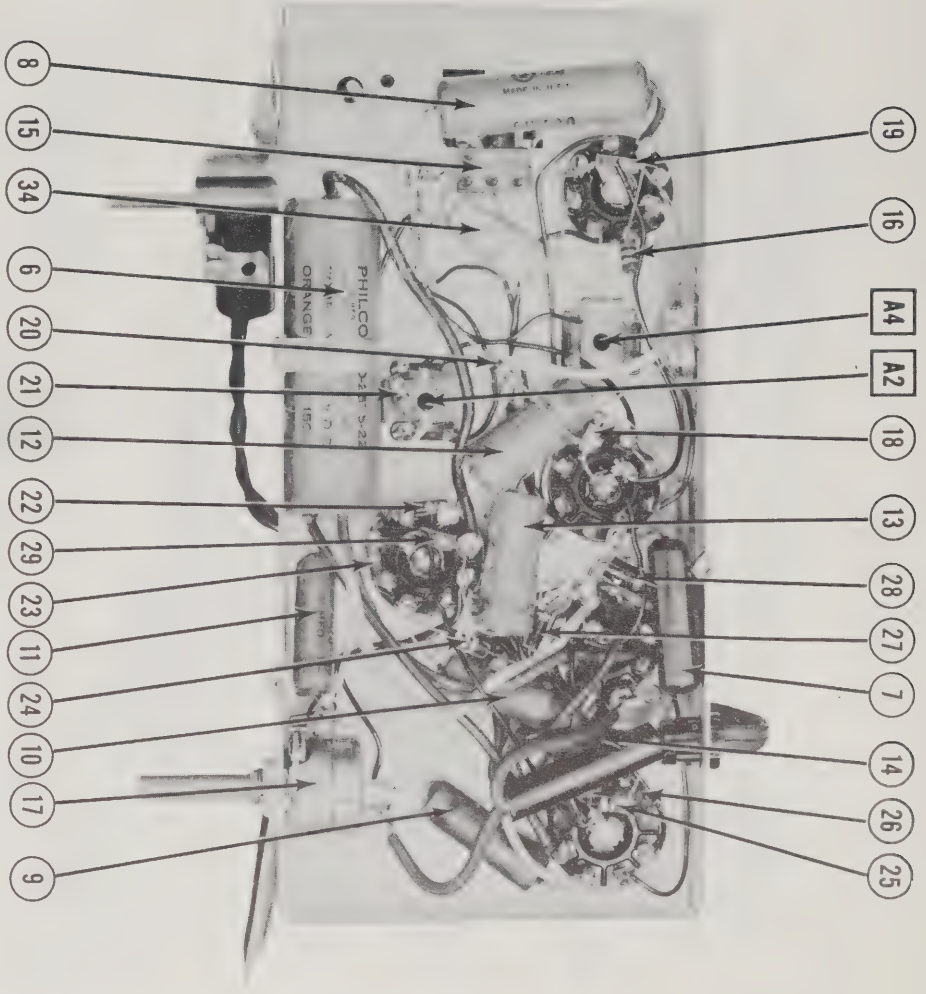
DIAL LIGHT

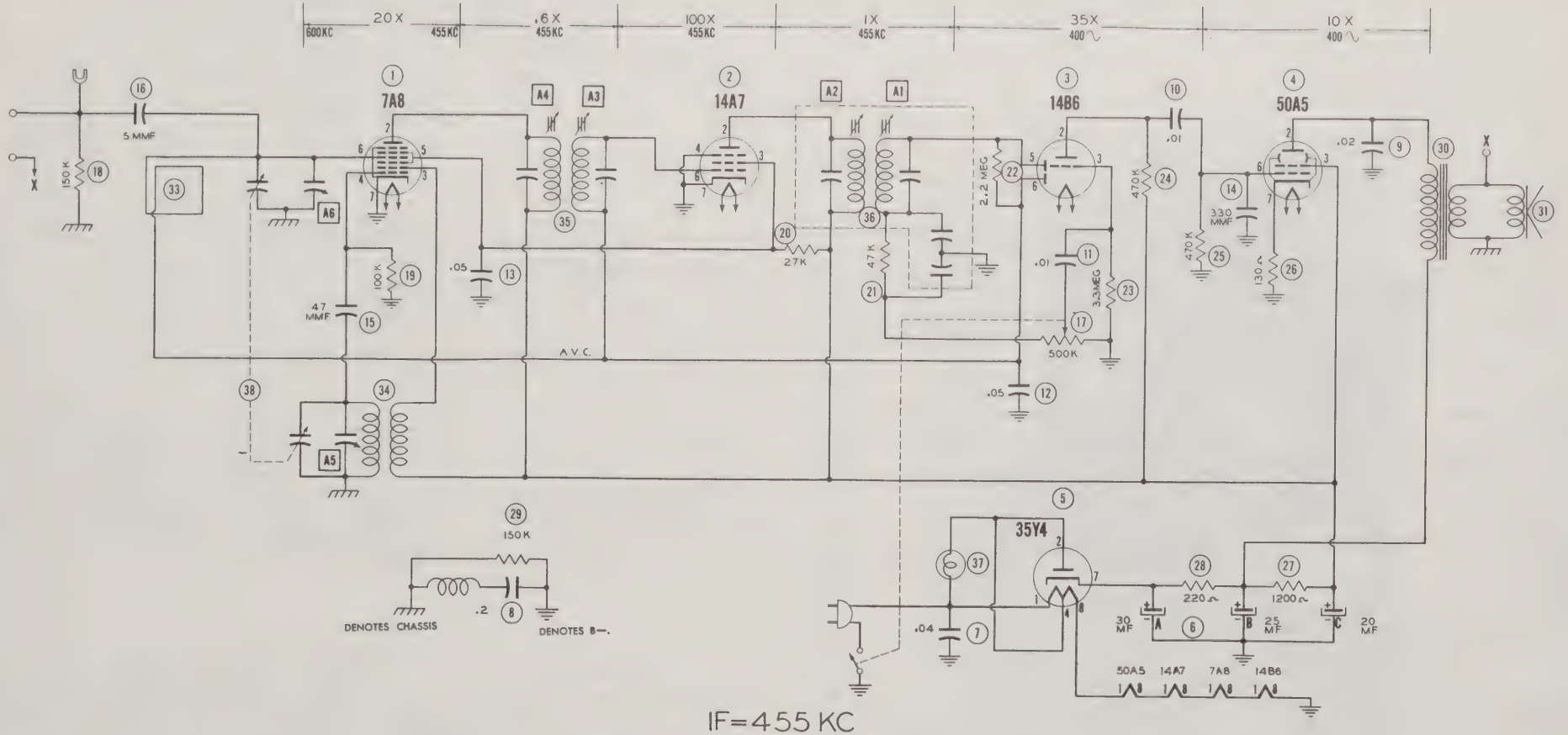
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
37	Bayonet	6-8V	0.15A	Brown	34-2068		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
38	2 Gang Var. Cap	31-2731	(27-487MMF, 30-184MMF)
	Cabinet	10710	Model 49-501
	"	10710A	" 49-501-I
	Dial Scale	54-5008	" 49-501
	" "	54-4581-1	" " 49-501-I
	Knob	27-4815-3	" 49-501
	"	54-4118	" 49-501-I

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	21VAC	95VDC	95VDC	-10VDC§	40VDC	-.4VDC	0V.	14VAC
2	14A7	35VAC	95VDC	40VDC	0V.	0V.	-.8VDC	0V.	21VAC
3	14B6	14VAC	50VDC	-.7VDC	0V.	-.7VDC	-.8VDC	0V.	0V.
4	50A5	85VAC	100VDC	95VDC	0V.	0V.	0V.	6.4VDC	35VAC
5	35Y4	117VAC	113VAC	95VDC	113VAC	110VDC	0V.	143VDC	85VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	20Ω	90KΩ	120KΩ	100KΩ	130KΩ	INF.	0Ω	13Ω
2	14A7	32Ω	90KΩ	120KΩ	0Ω	0Ω	2.7 Meg.	0Ω	20Ω
3	14B6	13Ω	560KΩ	3.3 Meg.	0Ω	600KΩ	2.7 Meg.	0Ω	0Ω
4	50A5	82Ω	90KΩ	90KΩ	INF.	0Ω	470KΩ	130Ω	32Ω
5	35Y4	112Ω	110Ω	90KΩ	110Ω	90KΩ	INF.	90KΩ	82Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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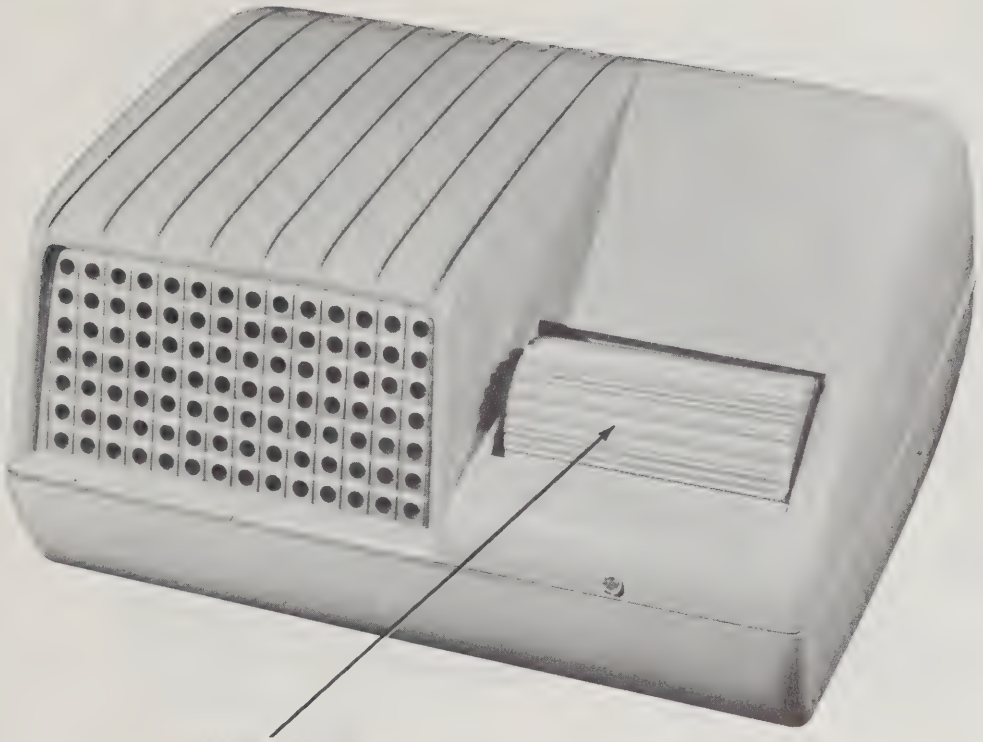
494-18

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO
MODEL 49-901

PHILCO
MODEL 49-901

PHILCO MODEL 49-901

TRADE NAME	Philco, Model 49-901
MANUFACTURER	Philco Corporation, Tioga & "C" Streets, Philadelphia, Pennsylvania
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 7A8 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .24 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 6 (Grid) of 7A8. Low side to B-.	455KC	Push button switch in low frequency position(white).	Across voice coil.	A1,A2 A3,A4	Adjust for maximum output in order given. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.

STATION SELECTOR ALIGNMENT

The frequency ranges for the six positions of the push button are as follows: White, 540-900KC; Blue, 600-1100KC; Red, 650-1200KC; Green, 850-1400KC; Orange, 900-1600KC; and Purple, 900-1600KC.

1 - Turn receiver on and allow it to warm up for at least fifteen minutes.
2 - Make up a list of stations desired to be set up, ranging in order from low to high frequency, making certain that each station falls within the range of its position.
3 - Depress station selector drum until it is in low frequency position (white).
4 - Adjust B1 to tune in desired station.
5 - Adjust B2 for maximum volume. This station is now set up.
6 - To set up the remaining positions follow the procedure outlined in steps 3,4,& 5 above, adjusting B3,B5,B7,B9,& B11to tune in stations and B4,B6,B8,B10, & B12 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 49-901

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	7A8	7A8	8U	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14P6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	30-2575-25	PRSA150/20-30 PRS150/24	EZ42215	DSB-403020-150	TA303	Filter - Orange
B	25	150						" - Red
C	20	150						" - Blue
7	.04	400	45-3500-2	484-05	GT6S4	ST-6-04	TC-14	Line Filter
8	.1	400	30-4644-1				72P2	Line Isolation-See Note
9	.02	400	61-0180	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	" "
12	.05	200	61-0122	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
13	.05	200	61-0122	484-05	GT2S5	ST-4-05	TC-15	Screen Bypass
14	220	300	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	Output Grid Bypass Cer.
15	220	500	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	Oscillator Feedback
16	220	500	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	Oscillator Grid Cap.
17	680	500	60-10685331					Oscillator Tuned Circuit
18	270	500	30-1224-14					" " " Cer.
19	220	500	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	RF Coupling
20	5	300	30-1234-5	1468-000005	5W5V5	MO.5-55	MS-55	Ant. Coupling Cer.

Note: Special inductively wound capacitor.

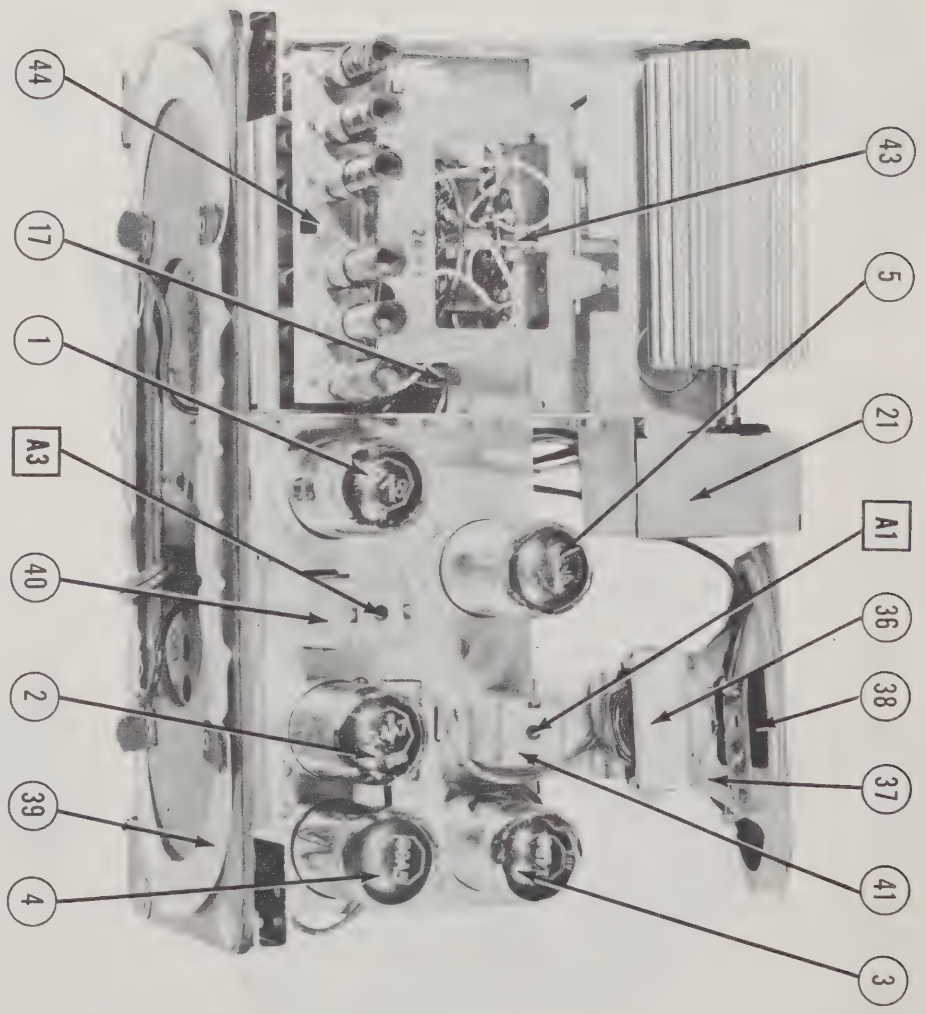
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21	500KΩ	½	33-5556-6			Volume Control and Switch.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES	
22	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl.	Ext. Ant. Loading
23	1 Meg	½	66-5103340	BTS-1 Meg	Br.-Blk.-Grn.	Converter Grid
24	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl.	Oscillator Grid
25	27KΩ	½	66-3273340	BTS-27K	Red-Vi.-Or.	Screen Dropping
26	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or.	Diode Filter
27	3.3 Meg	½	66-5333340	BTS-3.3 Meg	Or.-Or.-Grn.	AF Grid
28	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi,-Yl.	AF Plate Load
29	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi._Yl.	Output Grid
30	130Ω	½	66-1123340	BW-½-150	Br.-Or.-Br.	Output Cathode
31	12KΩ	½	66-3123340	BTS-12K	Br.-Red-Or.	Oscillator Anode
32	1200Ω	½	66-2123340	BTS-1200	Br.-Red-Red	Filter
33	220Ω	1	66-1224340	BW-1-220	Red-Red-Br.	Filter
34	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl.	Line Isolation
35	2.2 Meg	½	66-5223340	BTS-2.2 Meg	Red-Red-Grn.	AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	1760Ω	3.5Ω	205Ω	.7Ω	Part of 36-1627-3	A-3876 #	T22S45 #	A-2928 #	# Bend mounting tabs down, file out slots and mount on original brackets.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
37	FIELD	VC IMP.	36-1627-3	ST-113 † Mod. P4-X	4A07†	† Drill and tap magnet frame.
	PM	3.5Ω				
38	CONE DIA.	VC DIA.				
	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
39A	Loop Ant.		3Ω	32-4315		Green
B	" "			32-4316		Ivory
40	Input IF	18Ω	18Ω	32-4160-6	16-6678	
41	Output IF	15Ω	15Ω	32-4240		

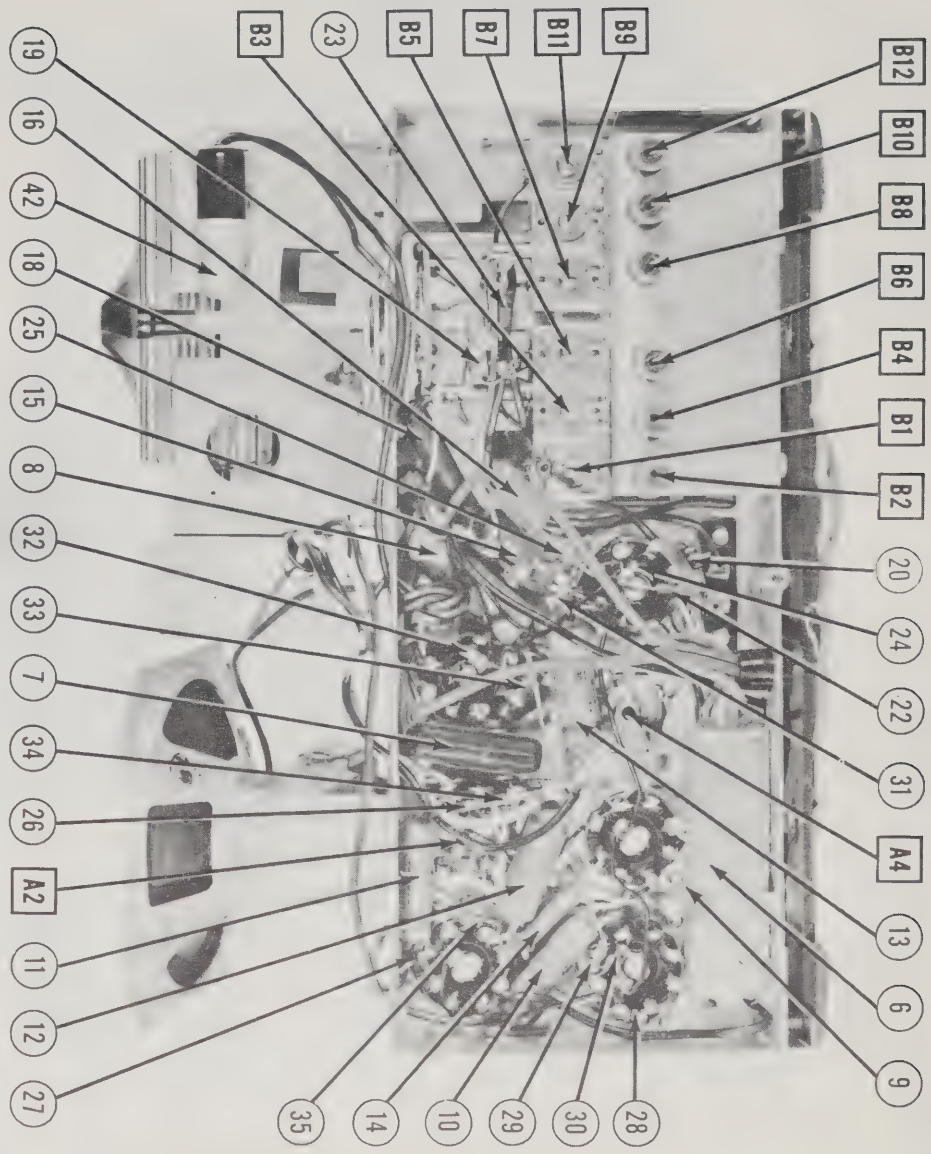
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
42	Bayonet	6-8V	0.15A	Brown	34-2068		Type # 47.

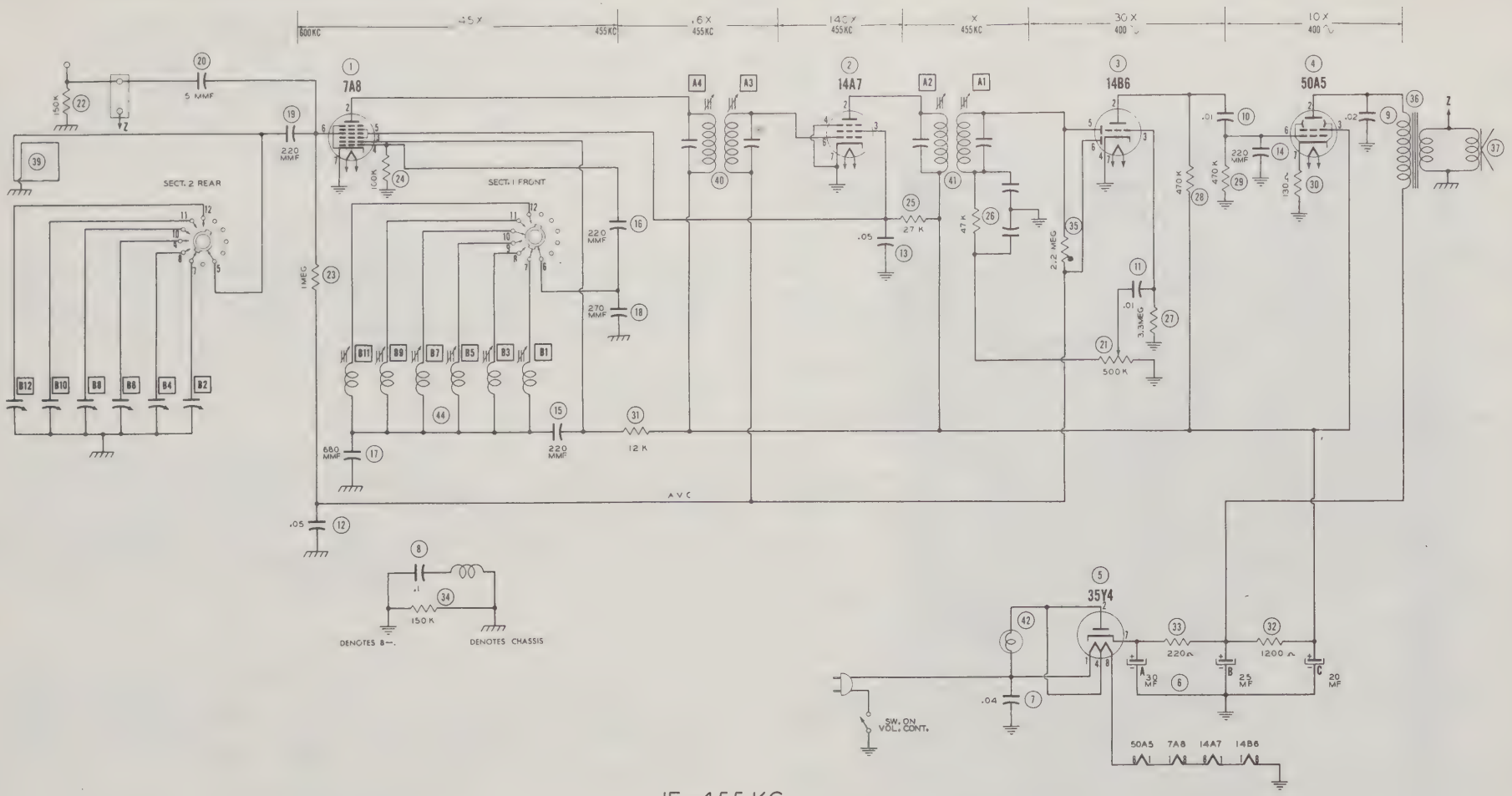
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
43	Switch	76-4057	Station Selector
44	Coil Assby.	76-4082	Oscillator
	Trimmer Assby.	31-6816	B2,B4,B7,B8,B10,B12
	Cabinet	10716	Ivory
	"	10719A	Green
	Wheel Assby.	76-4083	

CHASSIS—BOTTOM VIEW



PHILCO MODEL 49-901



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	31VAC	90VDC	75VDC	-.8VDC	75VDC	-.5VDC	0V.	64VAC
2	14A7	10VAC	90VDC	35VDC	0V.	0V.	-.6VDC	0V.	64VAC
3	14B6	10VAC	55VDC	-.4VDC	0V.	-.6VDC	-.6VDC	0V.	0V.
4	50A5	81VAC	98VDC	90VDC	85VDC	0V.	0V.	6.6VAC	85VAC
5	35Y4	117VAC	117VAC	117VAC	117VAC	117VAC	0V.	117VAC	117VAC

‡TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	34Ω	130KΩ	140KΩ	100KΩ	160KΩ	3.7 Meg.	0Ω	26Ω
2	14A7	16Ω	130KΩ	160KΩ	0Ω	0Ω	2.7 Meg.	0Ω	26Ω
3	14B6	16Ω	600KΩ	3.3 Meg.	0Ω	550KΩ	2.7 Meg.	0Ω	0Ω
4	50A5	34Ω	140KΩ	130KΩ	600KΩ	0Ω	470KΩ	130Ω	85Ω
5	35Y4	110Ω	110Ω	130KΩ	110Ω	130KΩ	INF.	130KΩ	85Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY
ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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494-19

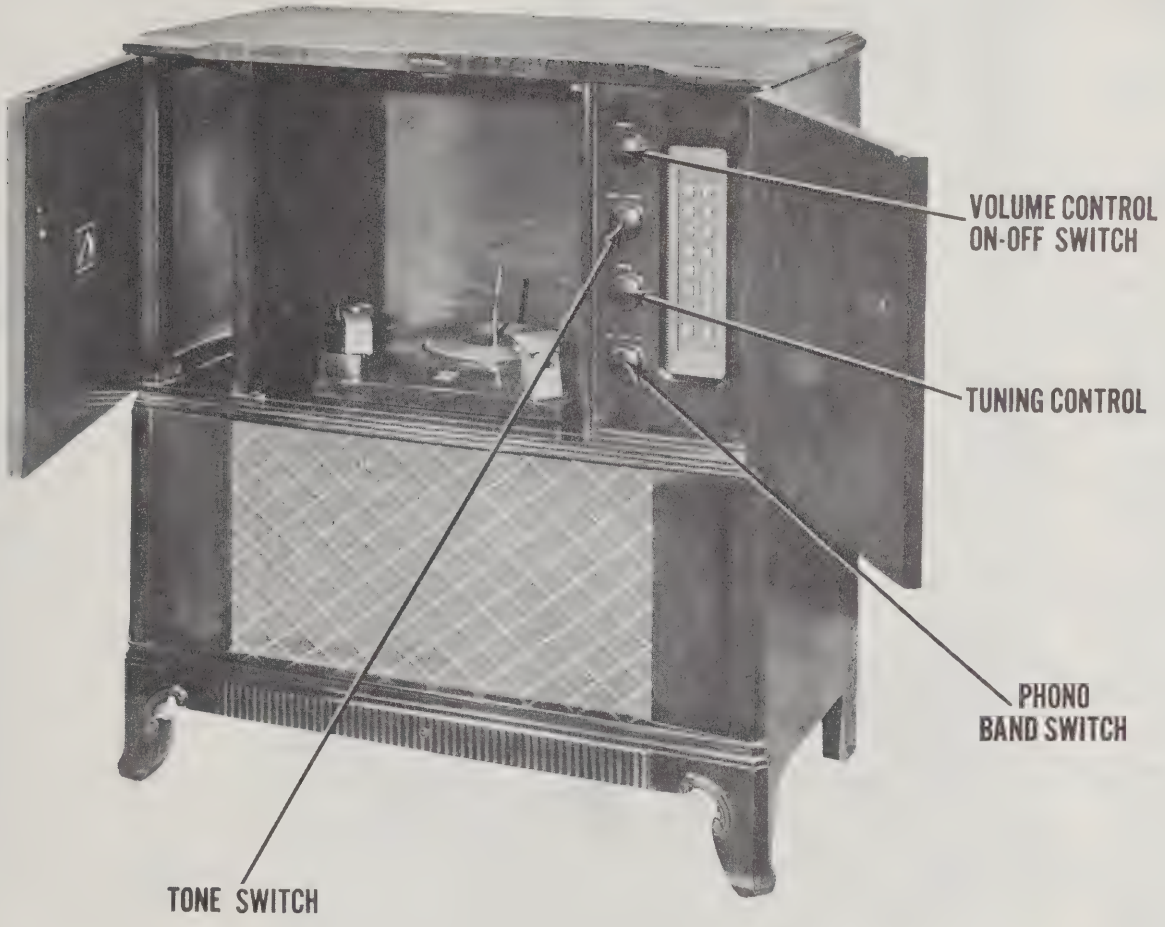
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

RCA (VICTOR) 8V90 (Ch. RC-618, RC-618A), 8V91 (Ch. RC-616A, RC-616H)

RCA (VICTOR) 8V90 (Ch. RC-618, RC-618A), 8V91 (Ch. RC-616A, RC-616H)



RCA (VICTOR) 8V90 (Ch. RC-618, RC-618A), 8V91 (Ch. RC-616A, RC-616H)

RCA VICTOR Model 8V90

TRADE NAME	RCA Victor, Models 8V90 (ch.RC-618, RC-618A), 8V91 (ch. RC-616A, RC-616H)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(NINE)	Types 6J6 Converter. 6BA6 1st IF Amp.,6AU6 FM 2nd IF, 6AL5 FM Det., 6AU6 AF Amp., 6AV6 Det-AVC-Phase Inv., (2) 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.55 Amp.@ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ.MOD. 88-108 MC

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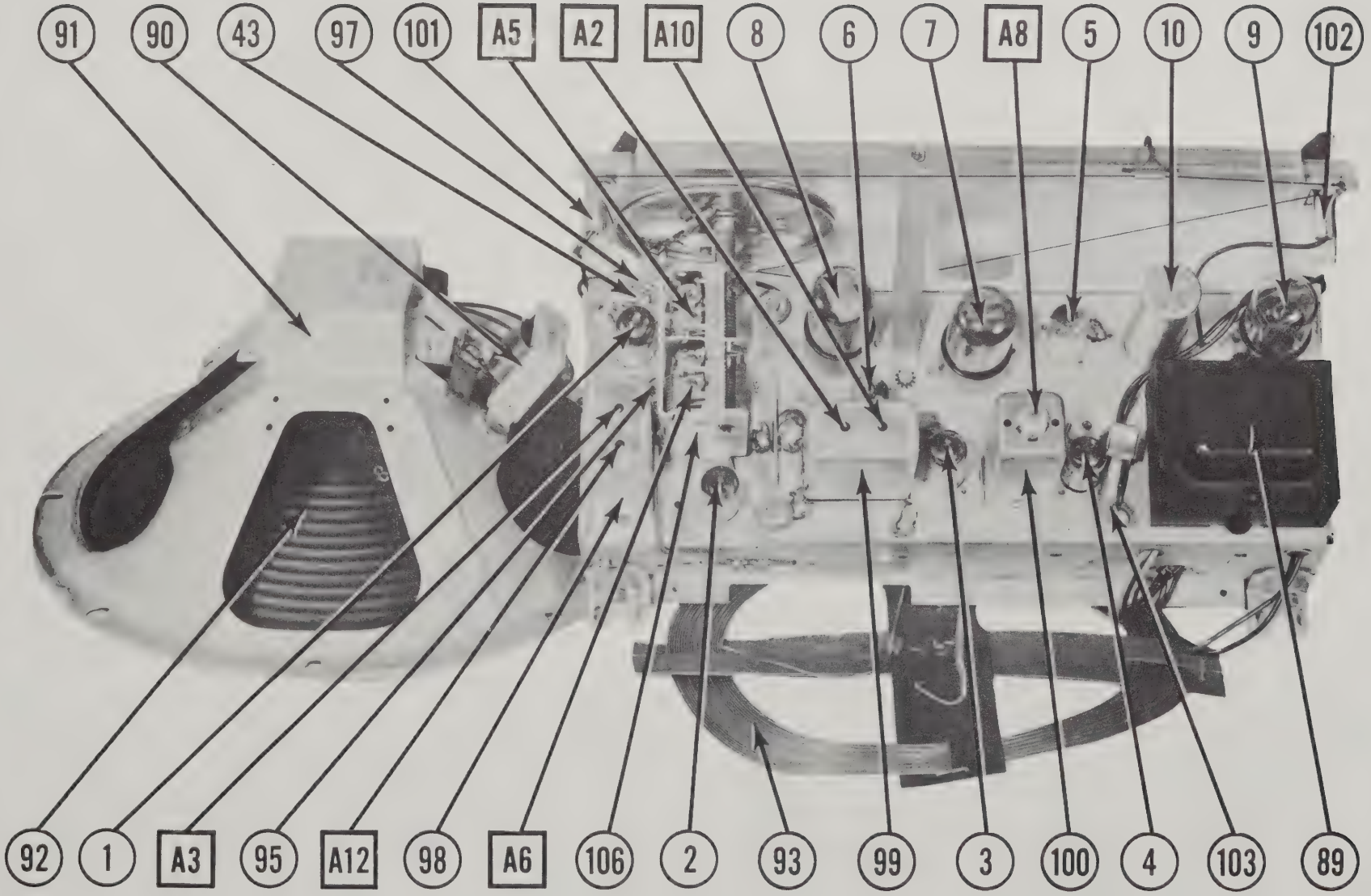
DATE 2/49-#494-20 Set#56-Folder #20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RCA (VICTOR) 8V90 (Ch. RC-618, RC-618A), 8V91 (Ch. RC-616A, RC-616H) PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6J6	6J6	7BF	
2	1st IF	6BA6	6BA6	7BK	
3	FM 2nd IF	6AU6	6AU6	7BK	
4	FM Detector	6AL5	6AL5	6BT	
5	AF Amp.	6AV6	6AV6	7BT	
6	Det.-AVC-Phase Inverter	6AV6	6AV6	7BT	
7	Power Output	6V6GT	6V6GT	7AC	
8	" "	6V6GT	6V6GT	7AC	
9	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	30	350	73372	AF64K4A	UP6BJ37	DV-311*	D14611	■ Filter
B	30	300			BR202A			▲ "
C	20	25						"
11	2	50	73747	PRS150/4	BR245	M-4-450	D7994	Stabilizing Cap.
12	.0035	1000	70996	1084-004	GT16D4	STM-16-004	TR-24	Output Plate Bypass
13	.0035	1000	70996	1084-004	GT16D4	STM-16-004	TR-24	" " "
14	.01	400	71925	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
15	.02	400	73668	484-02	GT4S2	ST-4-02	TC-12	" "
16	.01	400	71925	484-01	GT4S1	ST-4-01	TC-11	" "
17	.01	400	71923	484-01	GT4S1	ST-4-01	TC-11	" "
18	.0035	1000	70973	1084-004	GT16D4	STM-16-004	TR-24	Tone Compensation
19	.025	200	70612	484-025	GT4S25	ST-6-03	TC-13	" " -Note 1
20	.015	200	72130	484-015	GT6S15	ST-4-02	TC-12	" "
21	.002	100	73750	484-002	GT6D2	ST-6-002	TC-22	Audio Coupling-Note 2
22	.002	200	73750	484-002	GT6D2	ST-6-002	TC-22	Tone Compensation
23	.005	100	71926	484-005	GT6D5	ST-6-005	TC-25	De-emphasis
24	.005	200	71926	484-005	GT6D5	ST-6-005	TC-25	RF Bypass
25	.005	400	71553	484-005	GT6D5	ST-6-005	TC-25	2nd IF Decoupling
26	.005	400	71553	484-005	GT6D5	ST-6-005	TC-25	2nd IF Screen Bypass
27	.005	100	71926	484-005	GT6D5	ST-6-005	TC-25	2nd IF Cathode Bypass
28	.005	400	71553	484-005	GT6D5	ST-6-005	TC-25	Decoupling
29	.005	400	71553	484-005	GT6D5	ST-6-005	TC-25	1st IF Screen Bypass
30	.05	100	72596	484-05	GT2S2	ST-4-05	TC-15	AVC Filter
31	.005	400	71553	484-005	GT6D5	ST-6-005	TC-25	Mixer Plate Decoup.
32	.01	400	71925	484-01	GT4S1	ST-4-01	TC-11	Osc. Plate Decoupling
33	.01	100	71923	484-01	GT2S1	ST-4-01	TC-11	Filament Bypass
34	150	300	48125	1468-00015	5W5T15	MO.5-315	1FM-315	Phase Inv. Plate Bypass Cer.
35	150	300	48125	1468-00015	5W5T15	MO.5-315	1FM-315	AF Plate Bypass-Cer.
36	47	300	39042	1468-00005	5W5Q5	MO.5-315	1FM-315	Tone Compensation- Cer. Note 3
37	330	500	39640	1468-0003	5W5T3	MO.5-33	1FM-335	Diode Load Cap.-Note 4
38	330	500	39640	1468-0003	5W5T3	MO.5-33	1FM-335	" " " " "
39	150	300	48125	1468-00015	5W5T15	MO.5-315	1FM-315	Diode Filter - Cer.
40	150	300	48125	1468-00015	5W5T15	MO.5-315	1FM-315	" " "
41	150	300	48125	1468-00015	5W5T15	MO.5-315	1FM-315	Osc. Grid Cap. "
42	15	300	31353	1468-00001	5W5Q2	MOS.5-42	MS-415	" " " Note 5
43	56	300	73867					Fixed Padder "
44	68	300	33103	1468-000075	5W5Q7	MOS.5-47	MS-47	Tuning Cap. Iso. "
45	2	300	73866					Osc. Feedback "
46	1500	300	73748	1467-0015	1W5D15	MW.5-215	1FM-215	RF Coupling "
47	47	300	39042	1468-00005	5W5Q5	MO.5-45	1FM-45	Filament Bypass "

*Install new mounting plate.
Note 1-Model 8V91 uses .02 MFD in this application.
Note 2-Model 8V91 uses .003 MFD in this application.
Note 3-Used on Model 8V90 only.
Note 4-When either Item 37 or 38 are replaced, replace both with capacitor of equal value.
Note 5-Some models may use 22 MMFD in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
90A	12KΩ CT	3.7Ω	615Ω CT	.4Ω	73636	A-3823	T22887	A-2936	Used in Models 8V90 and 8V91 (Ch. RC-616H)
B					37899				Used in Model 8V91 (Ch.RC-616A)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.				
91A	PM	3.7Ω	92569-5W	ST-102†	12A4†	Used on Model 8V90 (Ch. RC-618A) and Model 8V91 (Ch. RC-616H).
B			92579-2W	Mod. P12-S		Used on Model 8V90 (Ch. RC-618).
C			92569-1KX			Used on Model 8V91 (Ch. RC-616A)
	CONE DIA.	VC DIA.				
92	12"	1-3/8"				

†Replace output transformer to match 6-8Ω voice coil.

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
93A	AM Loop Ant.		2.5Ω	73896		Model 8V90
B	" "			73611		Model 8V91
94A	FM Dipole Ant.		0Ω	72555		Model 8V90
B	"			71864		Model 8V91
95	FM Ant. Coil		0Ω	73918		
96	AM Osc. Coil	1Ω	6.5Ω§	73744		§Pickup Coil Resistance 2Ω
97	FM " "		0Ω	73916		
98A	AM 1st IF	6Ω	8Ω	73745		
B	FM " "	.3Ω	.3Ω			
99A	AM 2nd IF	7Ω	7Ω	74019		
B	FM " "	.8Ω	.8Ω			
100	Ratio Det.	.9Ω	.3Ω	73743		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA	INSTALLATION NOTES
101-103	Bayonet	6-8	0.2	White	11765		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
104A	Switch	73891	Tone (Model 8V90)
B	"	73602	" (Model 8V91)
105A	"	73890	Band (Model 8V90)
B	"	73609	" (Model 8V91, Ch. RC616A)
C	"	74173	" (Model 8V91, Ch. RC-616H)
106	2 Gang Var. Cap	73889	(19-434MMF, 27-205MMF)
	Dial Scale	73898	Model 8V90
	" "	73628	" 8V91

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	
48A	1.5 Meg	½	70342	D18-137XX	T-95	Volume Control tapped @ 250KΩ & 500KΩ
B	Shaft		Not Req.	A	Not Req.	Attach to 48A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

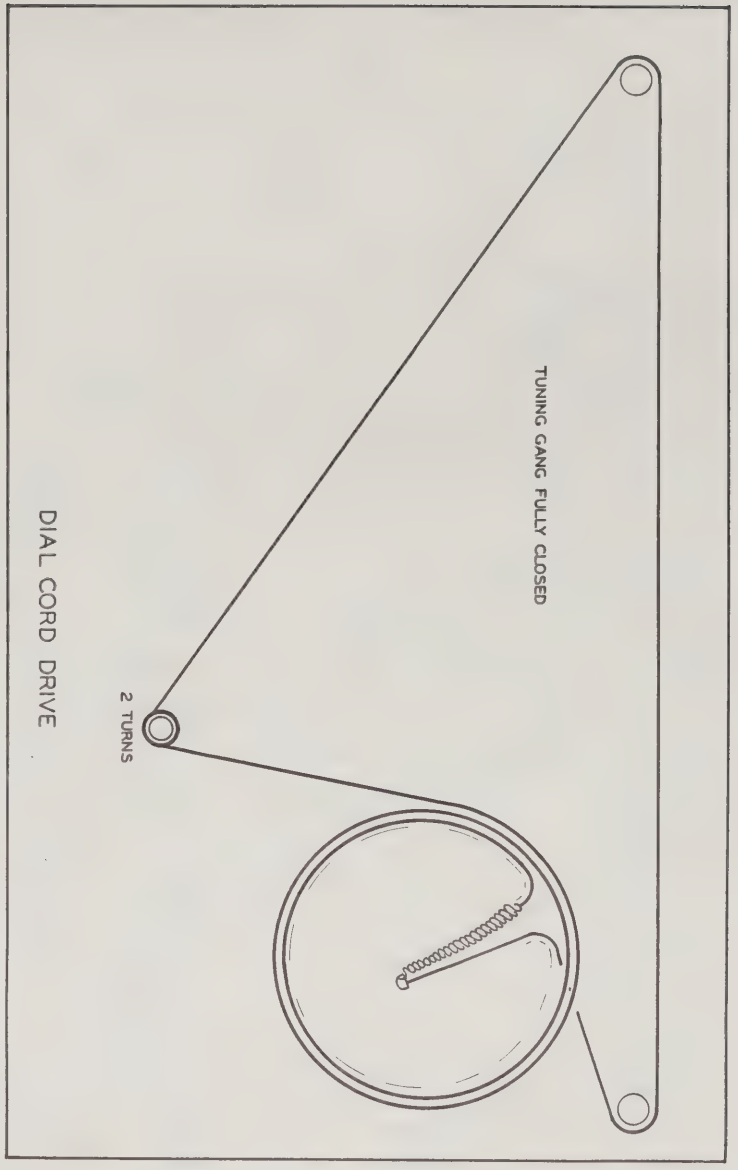
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	
49	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AM Loop Shunt-See Note 1
50	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. Converter Grid
51	33KΩ	½		BTS-33K	Or.-Or.-Or. Converter Plate Decoupling
52	18KΩ	½		BTS-18K	Br.-Gray-Or. Oscillator Grid-See Note 2
53	27KΩ	1		BTA-27K	Red-Vi.-Or. Oscillator Plate Decoupling
54	100Ω	½			Br.-Blk.-Br. Parasitic Suppressor
55	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
56	68Ω	½			Blue-Gray-Blk. 1st IF Cathode
57	27KΩ	½		BTS-27K	Red-Vi.-Or. 1st IF Screen
58	680Ω	½		BTS-680	Blue-Gray-Br. Decoupling
59	56KΩ	½		BTS-56K	Grn.-Blue-Or. Diode Filter
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode Load
61	270KΩ	½		BTS-270K	Red-Vi.-Yl. Diode Load
62	100Ω	½			Br.-Red-Br. 2nd IF Cathode
63	15KΩ	½		BTS-15K	Br.-Grn.-Or. 2nd IF Screen
64	680Ω	½		BTS-680	Blue-Gray-Br. 2nd IF Decoupling
65	100Ω	½			Br.-Blk.-Br. RF Filter
66	15KΩ	½		BTS-15K	Br.-Grn.-Or. De-emphasis
67	1200Ω	½		BTS-1200	Br.-Red-Red Balancing Resistor
68	3300Ω	½		BTS-3300	Or.-Or.-Red " "
69	39KΩ	½		BTS-39K	Or.-white-Or. Ratio Detector Diode Load
70	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
71	10KΩ	½		BTS-10K	Br.-Blk.-Or. Tone Compensation
72	330KΩ	½		BTS-330K	Or.-Or.-Yl. Phono Shunt
73	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation
74	15KΩ	½		BTS-15K	Br.-Grn.-Or. " "
75	27KΩ	½		BTS-27K	Red-Vi.-Or. " "
76	2.7 Meg.	½		BTS-2.7 Meg.	Red-Vi.-Grn. " " See Note 3
77	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
78	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load
79	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
80	82KΩ	2		BTS-82K	Gray-Red-Or. Phase Inverter Plate Load
81	470KΩ	2		BTS-470K	Yl.-Vi.-Yl. Output Grid
82	8200Ω	2		BTS-8200	Gray-Red-Red " "
83	470KΩ	2		BTS-470K	Yl.-Vi.-Yl. " "
84	470Ω	2		BT-2-470	Yl.-Vi.-Br. Output Cathode
85	2250Ω	5	73637	AB-2250	Filter
86	22 Meg.	½		BTS-22 Meg.	Red-Red-Blue Bias
87	560Ω	1		BTA-560	Grn.-Blue-Br. Parasitic Suppressor-See Note 1
88	3.9Ω	½			Or.-White-Gold Series Dial Light-See Note 4

Note 1-Not used in all models.
Note 2-Some models may use 22KΩ ½ W. in this application.
Note 3-Used in Model 8V90 only. Note 4-Used in Model 8V91 only.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
89	117V AC @ .55A	550V CT .065A DC	6.4V AC @ 3.85A		73601			P-3048#

#Drill new mounting holes.



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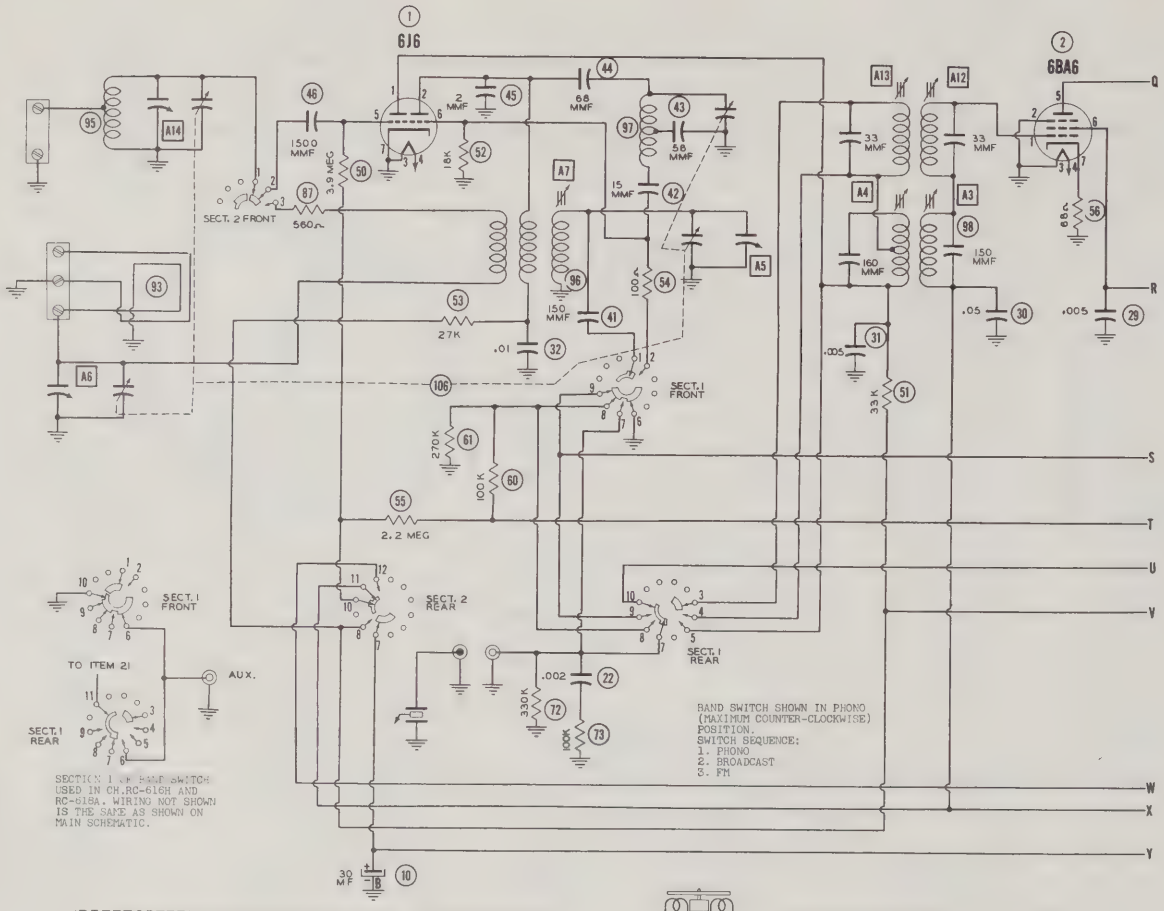

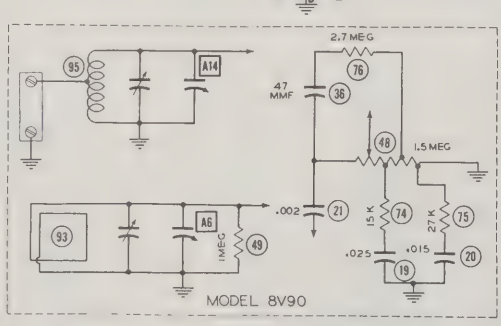

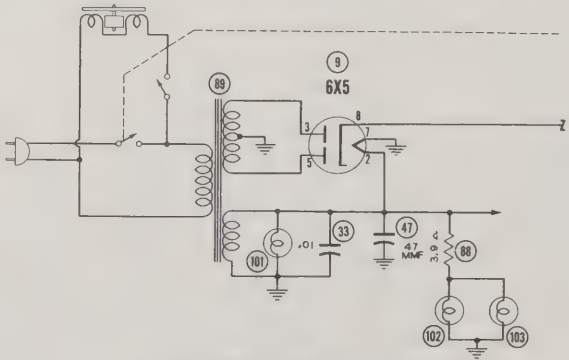

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
	6J6	105VDC	108VDC	0V.	6.4VAC	-1.6VDC	-5.8VDC§	0V.	-
‡	6J6	70VDC	128VDC	0V.	6.4VAC	-1.1VDC	-6.2VDC§	0V.	-
2	6BA6	-.5VDC	0V.	0V.	6.4VAC	215VDC	110VDC	.9VDC	-
‡	6BA6	0V.	0V.	6.4VAC	0V.	205VDC	105VDC	1.5VDC	-
‡	6AL5	.4VDC	-.7VDC	6.4VAC	0V.	-.8VDC	0V.	-.7VDC	-
5	6AV6	-.5VDC	0V.	0V.	6.4VAC	0V.	0V.	95VDC	-
6	6AV6	-.5VDC	0V.	0V.	6.4VAC	-.6VDC	-.5VDC	138VDC	-
7	6V6GT	0V.	6.4VAC	300VDC	230VDC	0V.	0V.	0V.	17VDC
8	6V6GT	0V.	6.4VAC	300VDC	230VDC	0V.	0V.	0V.	17VDC
9	6X5	0V.	6.4VAC	275VAC	0V.	275VAC	0V.	0V.	310VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

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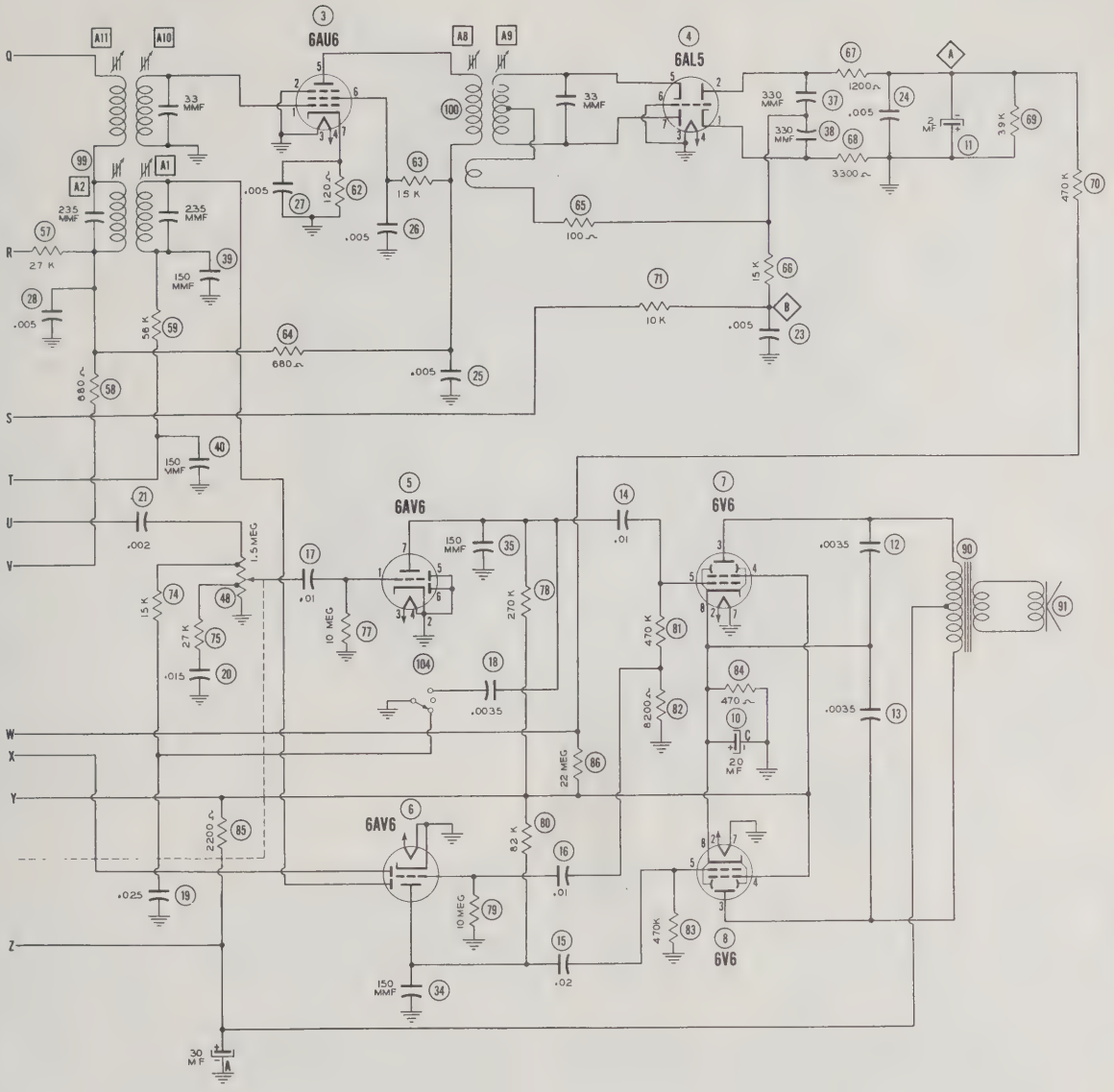

IF=455 KC AM

IF=10.7 MC FM

RADIO-PHONO SWITCH IN RADIO POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	6U6	9 MΩ	9 MΩ	0Ω	.1Ω	1 Meg.	1 MΩ	0Ω	-
1B	6U6	8 MΩ	8 MΩ	0Ω	.1Ω	1 Meg.	1 MΩ	0Ω	-
2	6BA6	540KΩ	0Ω	0Ω	.1Ω	54KΩ	540Ω	0Ω	-
3	6AM5	0Ω	1 MΩ	.1Ω	0Ω	2MΩ	1 MΩ	1MΩ	-
4	6AL5	3.3KΩ	1 MΩ	.1Ω	0Ω	INF.	0Ω	INF.	-
5	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	310KΩ	-
6	6AV6	10 Meg.	0Ω	0Ω	.1Ω	2 Meg.	1.0MΩ	1.7MΩ	-
7	6V6GT	0Ω	.1Ω	50KΩ	52KΩ	490KΩ	8.2KΩ	0Ω	440Ω
8	6V6GT	0Ω	.1Ω	50KΩ	52KΩ	470KΩ	INF.	0Ω	470Ω
9	6X5GT	0Ω	.1Ω	110Ω	INF.	110Ω	INF.	0Ω	60Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 3-9/16" from left edge of dial backplate.

AM Alignment should be completed before FM alignment is attempted.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to large AM stator of tun.cap. Low side to chassis.	455KC	AM (one position from fully clock-wise)	Tuning cap. fully closed	Across voice coil	A1,A2	Solder 47KΩ carbon resistor across AM primary of 2nd IF Transformer (99A). Adjust A1 for maximum output. Transfer resistor to secondary of same transformer and adjust A2 for maximum output. Remove 47KΩ resistor.
2	.01 MFD	"	"	"	"	"	A3,A4	Solder 47KΩ resistor across AM primary of 1st IF Transformer (98A). Adjust A3 for maximum output. Transfer resistor to secondary of same transformer and adjust A4 for maximum output. Remove 47KΩ resistor.
3	.01 MFD	High side to ext. AM ant. terminal "A". Low side to chassis.	1430KC	"	3" from calibration mark	"	A5	Adjust for maximum output.
4	.01 MFD	"	"	"	Tune for maximum output.	"	A6	" " " "
5	220MMFD	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Attenuate output of signal generator to give maximum meter reading of 3 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.01 MFD	High side to Pin 1 (grid) of 6AU6. Low side to chassis.	10.7MC (400∿amp modulated)	FM (Fully clock-wise)	Tuning cap. fully closed	DC probe to Point A. Common to chassis	A8,A9	Connect output meter across voice coil. Alternately adjust A8 for maximum deflection on VTVM and A9 for minimum output on output meter. Two or more points may be found which lower the audio output. At the correct point the minimum audio output is approached rapidly and is much lower than at any other point.
7	300Ω carbon res.	High side to ungrounded FM ant. terminal. Low side to chassis. (Disconnect ant. lead from "FM" terminal.)	"	"	"	"	A10,A11	Solder a 680Ω carbon resistor across FM primary of 2nd IF Transformer (99B) Adjust A10 for maximum deflection. Transfer resistor to secondary of same transformer and adjust A11 for maximum deflection. Remove 680Ω resistor.
8	"	"	"	"	"	"	A12, A13	Solder a 680Ω carbon resistor across FM primary of 1st IF Transformer (98B). Adjust A12 for maximum deflection. Transfer resistor to secondary of same transformer and adjust A13 for maximum deflection. Remove 680Ω resistor. Continue with FM RF Alignment in Step 9.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (2). Low side to chassis.	10.7MC (Freq. Mod.)	FM (fully clock-wise)	Tuning cap. fully closed	Vertical input to Point A. Ground to chassis.	A8,A10, A11	Disconnect 2 MFD cap. (11) from Point A. Adjust A8 A10 & A11 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
7	.01 MFD	High side to Pin 8 (grid) of 6J6. Low side to chassis.	"	"	"	"	A12,A13	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Reconnect cap. (11) Point A.
8	.01 MFD	"	"	"	"	Vertical input to Point B. Ground to chassis.	A9	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per Fig. 2. Continue with FM-RF Alignment in Step 9.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	300Ω carbon resistor	High side ungrounded FM ant. terminal. Low side to chassis. (Remove FM ant. lead from FM terminal.)	108MC (Unmodulated)	FM (fully clock-wise)	3-1/16" from calibration mark.	DC probe to Point A. Common to chassis	FM Osc. Coil (97)	Set A14 at maximum capacity. Compress or expand the osc. coil slightly for maximum deflection.
10	"	"	"	"	Tune for maximum deflect	"	A14	Rock tuning cap. and adjust for maximum deflection.
11	"	"	"	"	"	"	FM Ant. Coil (95)	Rock tuning cap. while compressing or expanding FM Ant. Coil slightly for maximum deflection. Repeat Steps 9, 10 & 11 until no further improvement can be made.

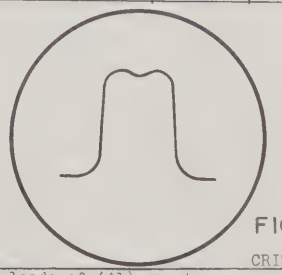


FIG. 1

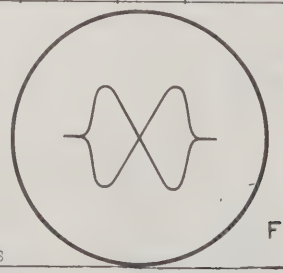
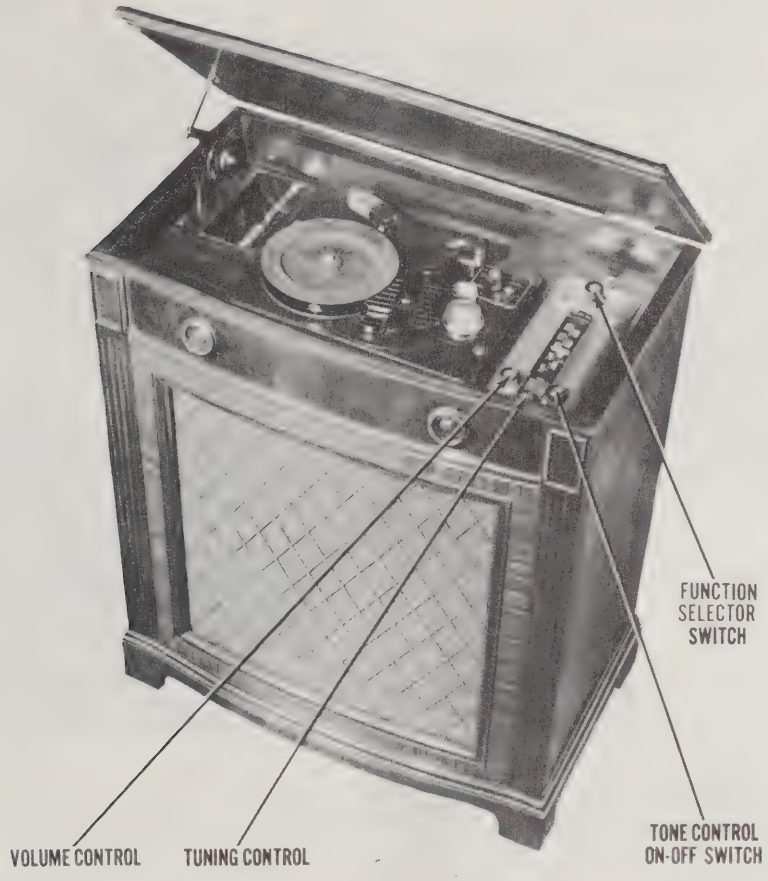


FIG. 2

CRITICAL LEAD DRESS

1. Keep leads of (41) short.
2. Dress resister (51) away from band switch and pin #5 of 6J6.
3. The ground lead of pin #2 of 6BA6 & 6AU6 (tubes 2&3) should be down against chassis. Its length is critical.
4. The AVC lead from resister (70) to band switch should be dressed against chassis and away from 6AU6 (3) socket.
5. Cap. (43) should have short leads and the color coded end of the cap. should go to the AM OSC coil (96). The cap. should be cemented down with polystyrene cement at the same time coil (97) is cemented.
6. The lead from the high side of the loop should be dressed away from tubes.
7. Lead from pin #2 of 6J6 to 1st IF transformer should be dressed against the chassis.
8. Connect cap. (44) directly between tuning cap. and pin #1 of 6J6.
9. Make all FM leads as short as possible.
10. Dress lead from pin #5 of 6BA6 (2) to 2nd IF transformer against chassis.
11. Dress resister (77) near chassis base.
12. Dress all AC leads away from volume control.
13. The lead from "FM" terminal of Ant. terminal strip to FM Ant. coil (95) should be dressed away from 6BA6 (2).
14. The taps on FM OSC & Ant. coils are critical. FM Ant. coil tap should be ¼ turn from the ground end. Fm OSC coil tap should be 2½ turns from tuning cap. terminal
15. Dress capacitors (33) & (47) against the chassis with the shortest lead length possible.
16. The position of FM Ant. coil should be midway between 6J6 tube and 1st IF transformer. The end of FM OSC coil should be approximatly 3/16" from 6J6.

SILVERTONE MODEL
8103 (Ch. 110.473)



SILVERTONE MODEL
8103 (Ch. 110.473)

SILVERTONE MODEL 8103

TRADE NAME	Silvertone, Model 8103 (Ch. 110.473)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Receiver with Wire Recorder
TUBES (SEVEN)	Types, 7Q7 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 1273 Pre-Amp., 7C5 Bias Osc., 7C5 Power Output, 7Z4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1700KC RATING .47 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 15/16" from left edge of dial backplate. This is the calibration mark referred to in Step 2 below.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 7Q7. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2		Loop	1500KC	3-1/8" from calibration mark.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A5 for maximum output.
3		"	"	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 2/49-#494-21 SET #56 - FOLDER-#21

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Converter	7Q7	7Q7	8AL	
2	IF Amp.	7A7	7A7	8V	
3	Det.-AVC-AF	7B6	7B6	8W	
4	Pre-Amp.	1273	1273		
5	Bias Osc.	7C5	7C5	6AA	
6	Power Output	7C5	7C5	6AA	
7	Rectifier	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
8A	40	300		AF862J4A	UP43145C	DY-405*	EL424	▲ Filter
B	20	300				M-20-350		◓ "
C	20	300						■ Decoupling
D	25	20						Cathode Bypass
9	10	400	A2078	PRS450-10	BR1045	M-10-450	UT-12	Decoupling
10	.05	500		684-05	DT6S5	MPH-6-05	72P1	Line Filter
11	.002	400		484-002	DT6D2	ST-6-002	TC-22	Output Plate Bypass
12	.005	600		684-005	DT6D5	ST-6-005	TC-25	Tone Compensation
13	.05	600		684-05	DT6S5	ST-6-05	TC-15	Audio Coupling
14	.01	400		484-01	DT4S1	ST-4-01	TC-11	" "
15	.001	600		684-001	DT6D1	ST-6-001	TC-21	Tone Compensation
16	.01	400		484-01	DT4S1	ST-4-01	TC-11	" "
17	.001	600		684-001	DT6D1	ST-6-001	TC-21	" " -Note
18	.001	600		684-001	DT6D1	ST-6-001	TC-21	RF Bypass
19	.2	600		684-.2	DT6P2	ST-6-2	TC-2	Cathode Bypass
20	.015	600			DT6S15			Fixed Trimmer
21	.01	400		484-01	DT4S1	ST-4-01	TC-11	Bias Osc. Grid Cap.
22	.02	400		484-02	DT4S2	ST-4-02	TC-12	Audio Coupling
23	.002	400		484-002	DT6D2	ST-6-002	TC-22	Tone Compensation
24	.2	200		484-.2	DT4P2	ST-4-.2	TC-2	Audio Coupling
25	.05	600		684-05	DT6S5	ST-6-05	TC-15	Pre-Amp. Screen Byp.
26	.05	600		684-05	DT6S5	ST-6-05	TC-15	Screen Bypass
27	.05	600		684-05	DT6S5	ST-6-05	TC-15	RF Bypass Pwr. Supply
28	.05	600		684-05	DT6S5	ST-6-05	TC-15	AVC Filter
29	.001	600		684-001	DT6D1	ST-6-001	TC-21	Tone Compensation
30	220	500		1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass
31	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Note

*Parallel sections to obtain desired capacity. Note-Not used in all models.

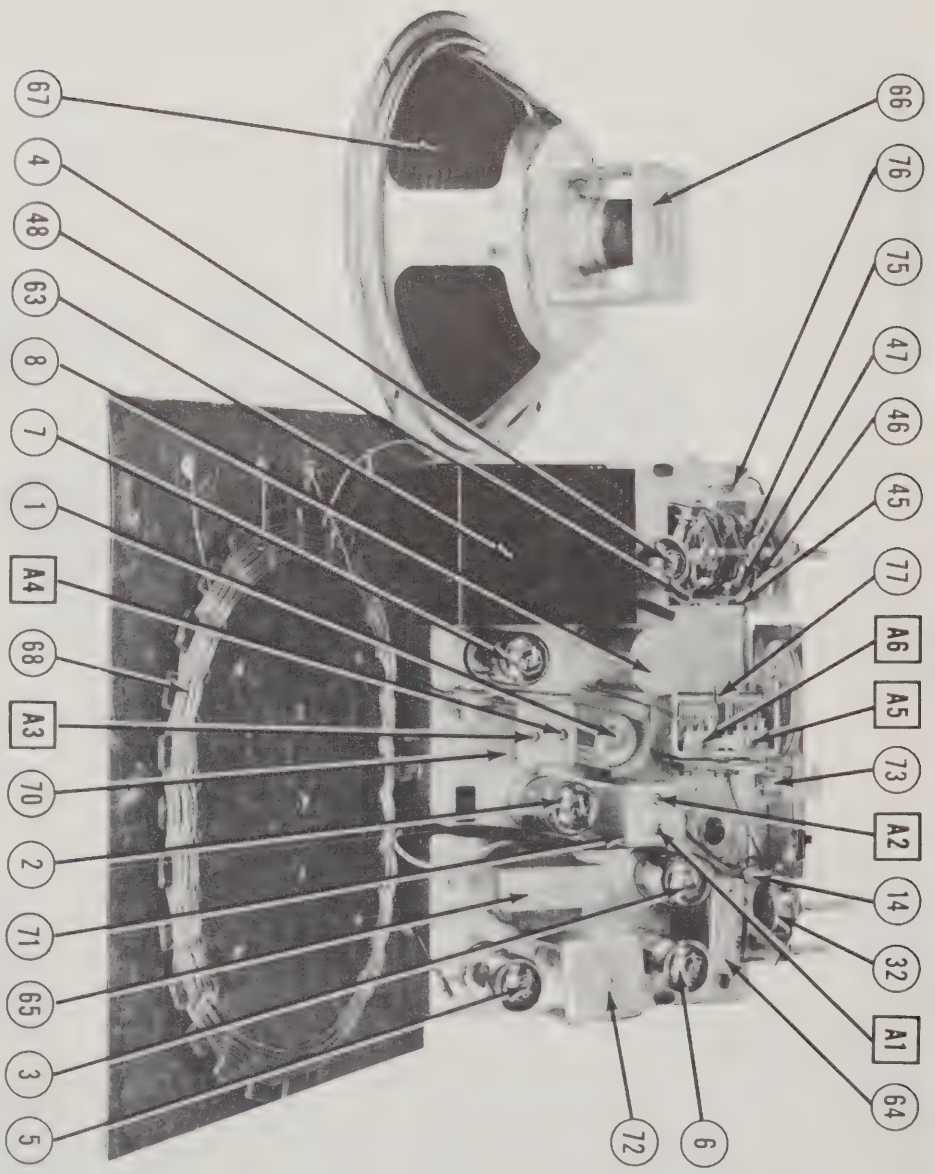
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
32A	2 Meg.	½	A2485	D13-139	M-66-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 32A per instructions
33A	500KΩ	½	A2486	D11-130	M-55-S	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 33A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
34	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
35	15KΩ	½		BT-2-15K	Br.-Grn.-Or. Conv. Plate Decoup.
36	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
37	680KΩ	½		BTS-680K	Blue-Gray-Yl. Diode Load
38	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid

CHASSIS—TOP VIEW



DATE 2/49-#494-21 SET #56 - FOLDER-#21

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
39	2.2MΩ	½		BTS-2.2M	Or.-Or.-Yl. AF Plate Load
40	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Output Grid
41	22Ω	½		BW-½-22Ω	Red-Yl.-Br. Output Cathode
42	470Ω	1		BTA-470	Yl.-Vl.-Br. Filter
43	270KΩ	½		BTS-270K	Red-Vl.-Yl. Mic. Shunt-See Note 1
44	18Ω	2		BW-2-18	Br.-Gray-Blk. Surge Limiter
45	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Phono Shunt
46	150KΩ	½		BTS-150K	Br.-Grn.-Yl. " "
47	2.4Ω	½		BW-½-2.2	Red-Yl.-Gold Series Voice Coil
48	1Ω	½		BW-½-1	Br.-Blk.-Gold Output Transformer Sec. Loading
49	3.3Ω	1		BW-1-3.3	Or.-Or.-Gold Output Transformer Sec. Loading
50	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Level Ind. Network
51	150KΩ	½		BTS-150K	Br.-Grn.-Yl. " " " "
52	470KΩ	½		BTS-470K	Grn.-Br.-Yl. " " " "
53	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " " "
54	330Ω	½		BW-½-330	Or.-Or.-Br. Parasitic Suppressor
55	18KΩ	½		BTS-18K	Br.-Gray-Or. Bias Osc. Grid
56	10Ω	½		BW-½-100	Br.-Blk.-Br. Bias Osc. Cathode
57	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vl.-Grn. Pre-Amp. Grid
58	2.2 Meg.	½		BTS-2.2 Meg	Red-Red-Grn. Pre-Amp. Screen
59	47KΩ	½		BTS-47K	Yl.-Vl.-Yl. Pre-Amp. Plate Load
60	47KΩ	½		BTS-47K	Yl.-Vl.-Yl. Pre-Amp. Decoup.
61	470Ω	½		BTS-4700	Yl.-Vl.-Red Bleeder-See Note
62	68KΩ	½		BTS-68K	Blue-Gray-Or. Tone Comp.

Note-Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
63	117V AC @ .47A	510V CT @ .07ADC	6.6VAC @ 3.2A		A-1091	P-6120‡‡	T22R02‡‡	P-3048‡

‡Drill new mounting holes. ‡‡Add series resistor to reduce plate voltage.

FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA SILVERTONE PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
64	.032A	300Ω	10 Henries	A-3368	C-1277	T20C52**	C-1277	**Drill one new mounting hole.

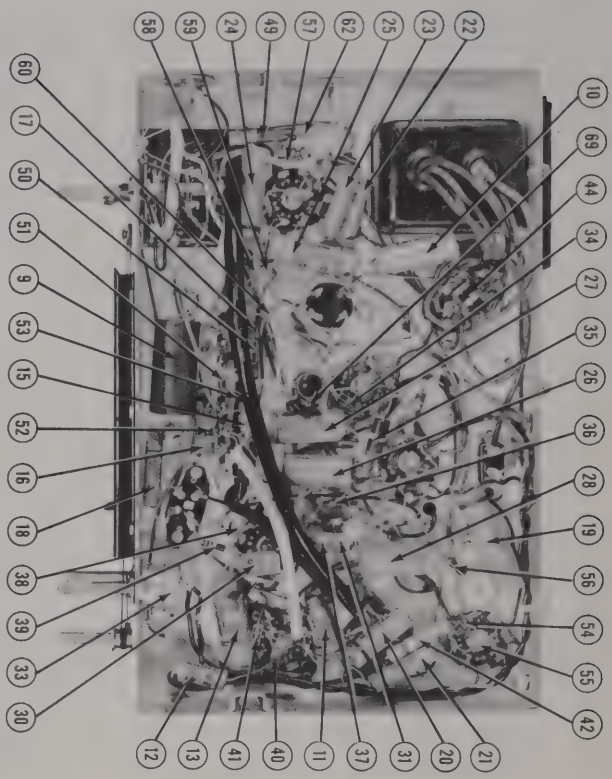
TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
65	4900Ω	3.3Ω	475Ω	.7Ω	A-1339	A-3824	T22S58	A-2902‡	‡Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
66	FIELD PM	VC IMP. 3.5Ω	A-58103	ST-119† Mod. P10-T	10A31	†Replace output transformer to match 6-8Ω voice coil
67	CONE DIA. 8-3/8"	VC DIA. 1"				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.	
68	Loop Ant.	0Ω	1.5Ω	A28205		
69	Osc. Coil		9.3Ω	A28184	14-1060§	§Add 50 MMFD from high side tuning cap. to osc. grid.
70	Input IF	21Ω	21Ω	A3371	16-6658	
71	Output IF	33Ω	33Ω	A3535	16-6660	
72	Bias Osc. Coil	2.8Ω	0Ω	A28178		

DIAL LIGHT

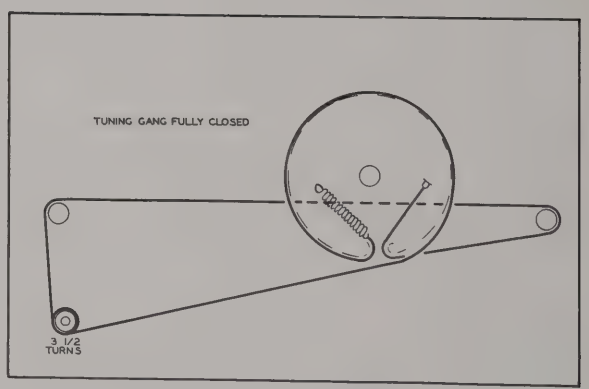
ITEM No.	BASE TYPE	VOLTS	AMPS.	BULB COLOR	REPLACEMENT DATA SILVERTONE PART No.		INSTALLATION NOTES
73	Bayonet	6-8	0.15	Brown			Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
74		L-71-A	L-71-A Original Part

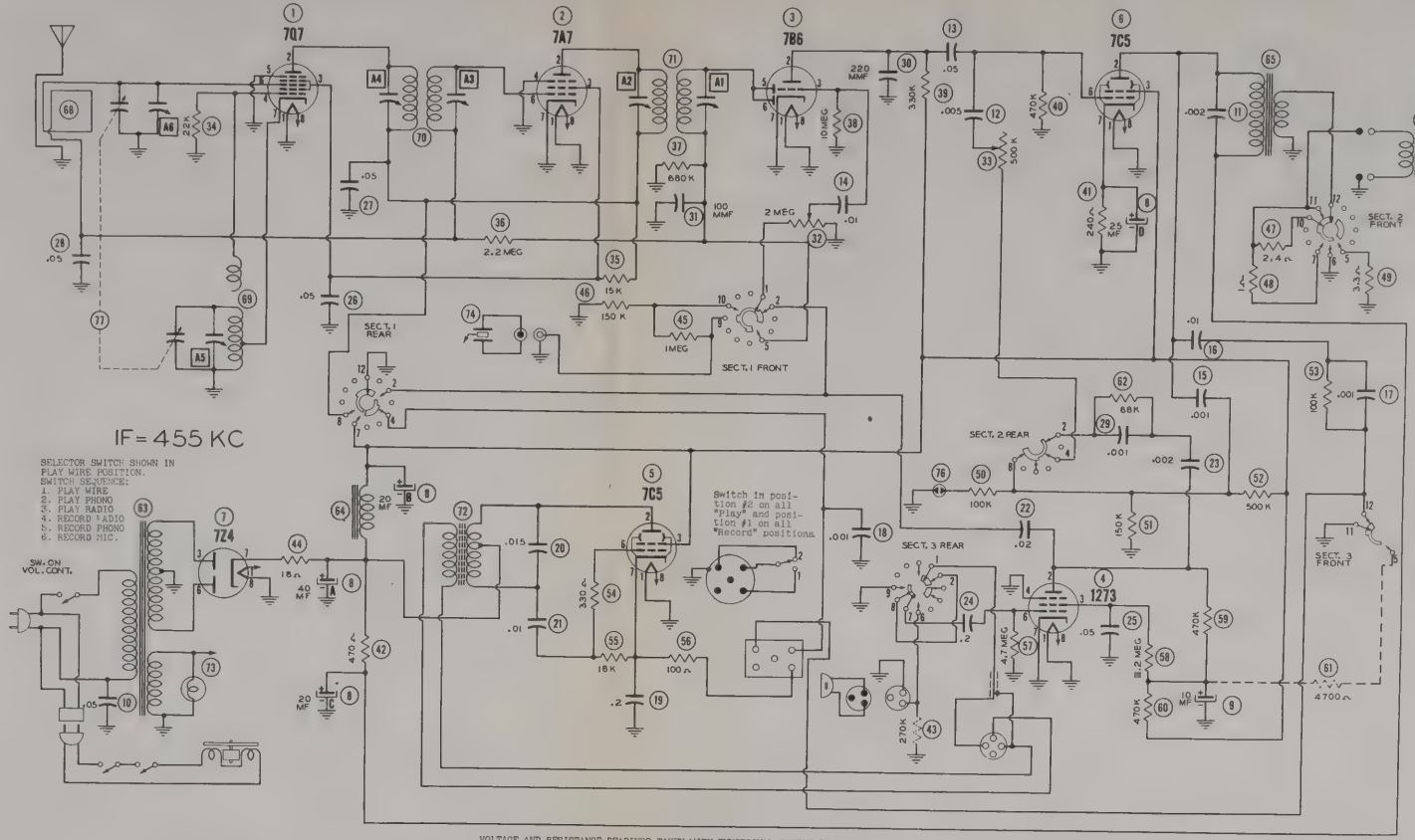
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
75	Switch	A3791	Function
76	Lamp	A4926	Neon
77	2 Gang Var. Cap	A1695	(24-444MMF, 23-185MMF)
	Dial Pointer	A4146	
	Dial	A40131	



DIAL CORD DRIVE

DATE 2/49-4494-21 SECT #66 - FOLDER-#21



VOLTAGE AND RESISTANCE READINGS TAKEN WITH FUNCTIONAL SWITCH IN RECORD RADIO POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	6.6VAC	205VDC	85VDC	1.4VDC	0V	0V	0V	0V
2	7A7	0V	205VDC	85VDC	0V	0V	0V	0V	6.6VAC
3	7B6	0V	90VDC	-.6VDC	0V	-.7VDC	-.7VDC	0V	6.6VAC
4	1273	6.6VAC	27VDC	16VDC	0V	0V	-.7VDC	0V	0V
5	7C5	0V	215VDC	205VDC	-37VDC	200VDC	-.38VDC	4VDC	6.6VAC
6	7C5	0V	180VDC	205VDC	205VDC	0V	0V	11.5VDC	6.6VAC
7	7Z4	6.6VAC	215VDC	255VDC	0V	0V	255VDC	215VDC	0V

TAKEN WITH VACUUM TUBE VOLTMETER.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	.1Ω	110KΩ	125KΩ	22KΩ	0Ω	2.2Meg.	1Ω	.1Ω
2	7A7	0Ω	110KΩ	125KΩ	0Ω	0Ω	2.2Meg.	0Ω	.1Ω
3	7B6	0Ω	440KΩ	10Meg.	0Ω	68OKΩ	68OKΩ	0Ω	.1Ω
4	1273	.1Ω	900KΩ	2.7Meg.	0Ω	0Ω	4.7Meg.	1Ω	.1Ω
5	7C5	0Ω	110KΩ	110KΩ	18KΩ	110KΩ	18KΩ	1.0Ω	.1Ω
6	7C5	0Ω	110KΩ	110KΩ	110KΩ	INF.	470KΩ	2.0Ω	.1Ω
7	7Z4	.1Ω	110KΩ	90Ω	INF.	INF.	90Ω	110KΩ	0Ω

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

TELE-TONE
MODEL TV149

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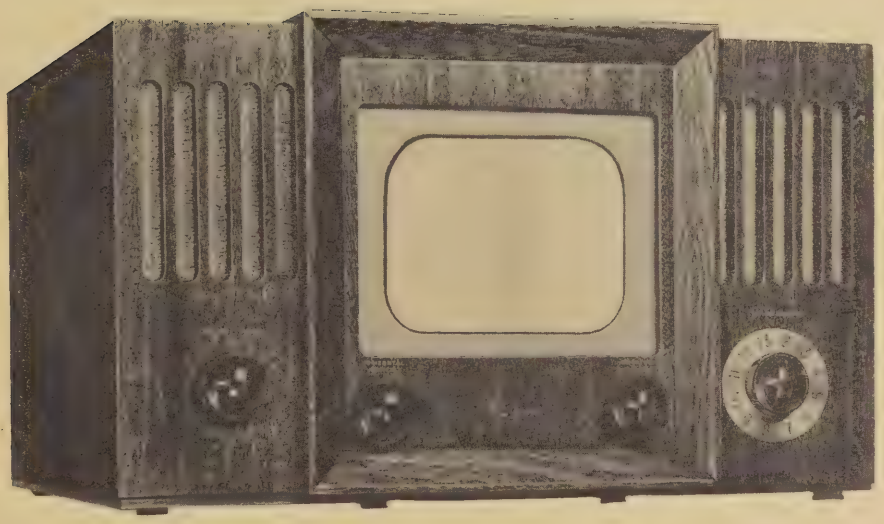

TELE-TONE
MODEL TV149

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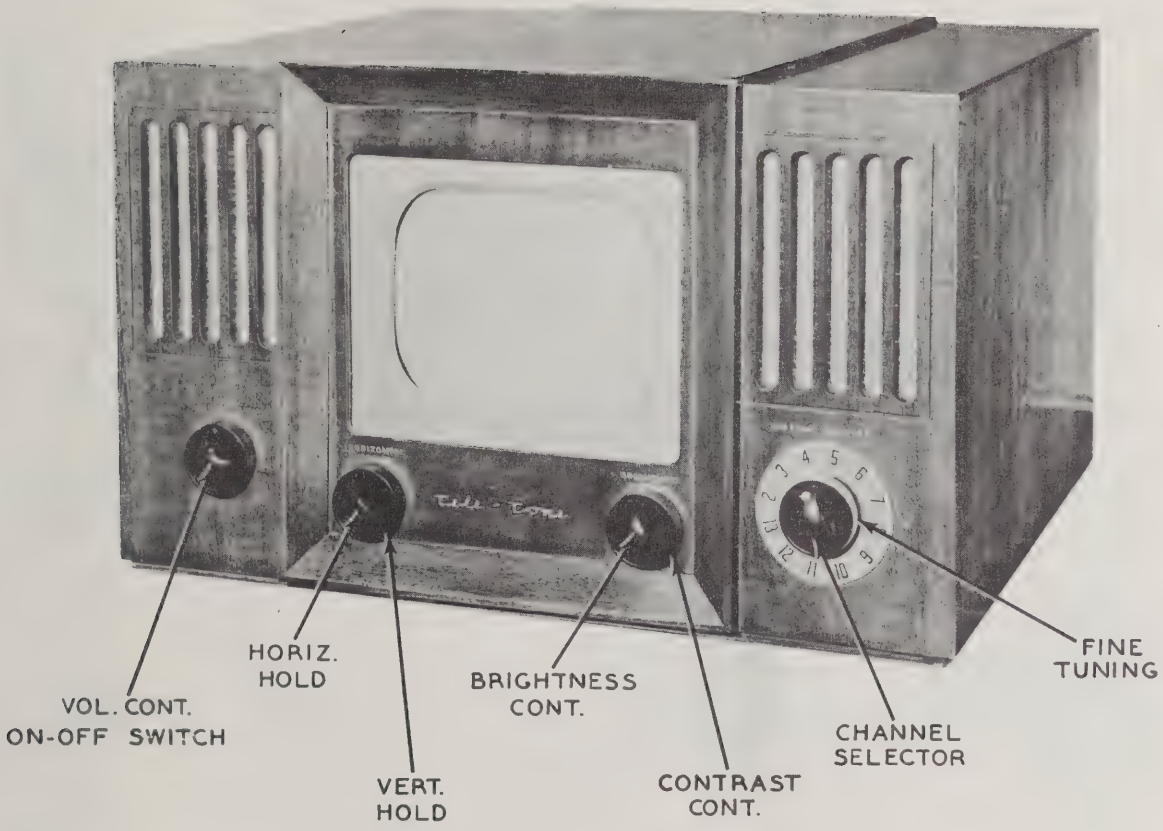

TELE-TONE
MODEL TV149

TRADE NAME	Tele-tone Model TV-149
MANUFACTURER	Tele-tone Radio Co., 540 W 58th St., New York, N.Y.
TYPE SET	Television Reciever
TUBES	Twenty-two
POWER SUPPLY	105-125 Volts, 60 Cycle AC RATING .96 Amp. @ 117 Volts AC
TUNING RANGE–	Channels 2 through 13

INDEX

Alignment Instructions 10

Block Diagram 13

Parts List and Description 14,15,16

Photographs
- Cabinet Rear View 16
- Capacitor Identification 11,18
- Chassis Top View 3
- High Voltage Supply 19
- RF Tuner Left Side 7
- RF Tuner Right Side 6
- Resistor Identification 12,17
- Trans., Inductor & Alignment Identification 4,9

Schematic 2

Tube Placement Chart 5

Voltage and Resistance Measurements 8

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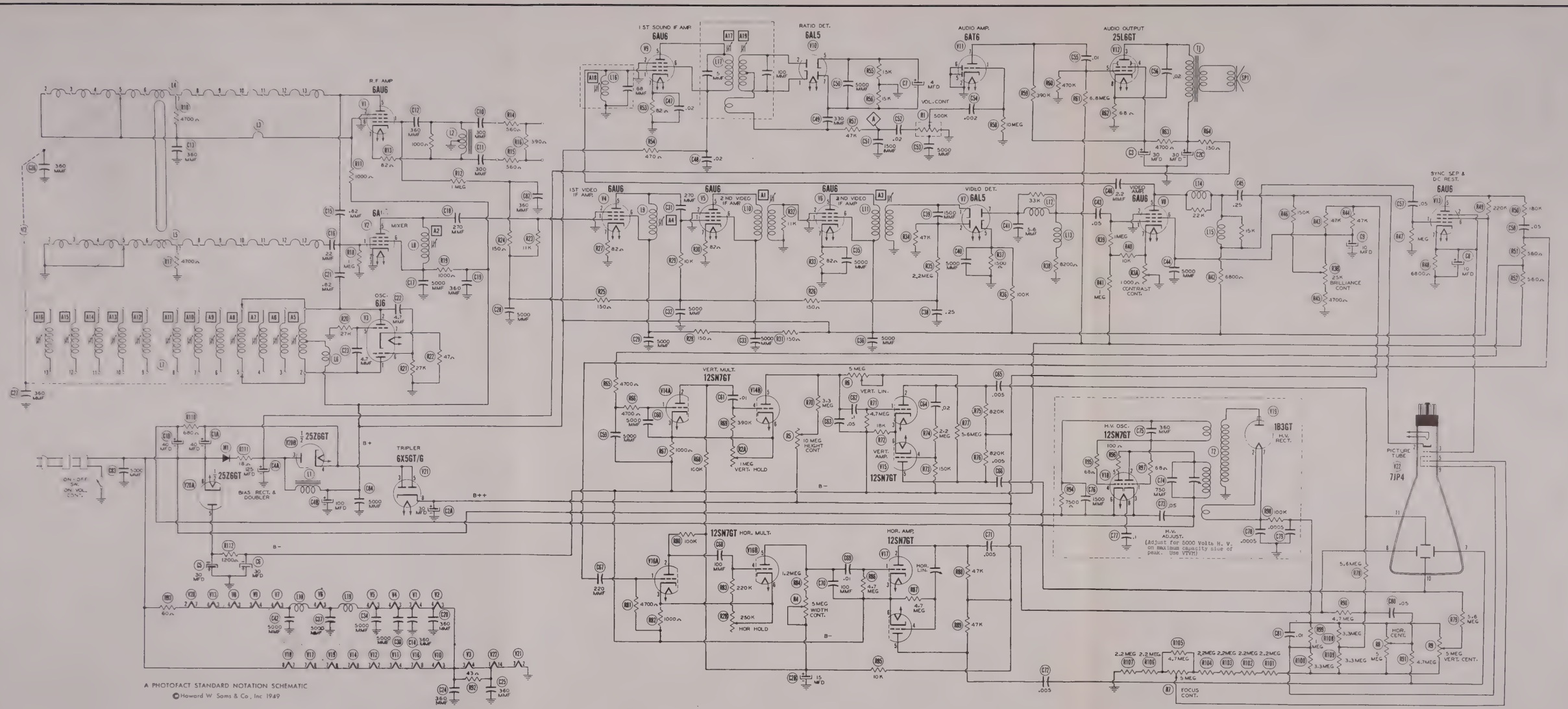
TELE-TONE
MODEL TV149
R.F. AMP 6AU6
1ST SOUND IF AMP 6AU6
RATIO DET. 6AL5
AUDIO AMP. 6AT6
AUDIO OUTPUT 25L6GT
1ST VIDEO IF AMP. 6AU6
2ND VIDEO IF AMP. 6AU6
2ND VIDEO IF AMP. 6AU6
VIDEO DET. 6AL5
VIDEO AMP. 6AU6
SYNC SEP & DC REST. 6AU6
MIXER
OSC. 6J6
BIAS RECT. & DOUBLER 25Z6GT
TRIPLER 6X5GT/G
VERT. MULT. 12SN7GT
VERT. LIN.
VERT. AMP. 12SN7GT
12SN7GT HOR. MULT.
HOR. AMP. 12SN7GT
H.V. OSC. 12SN7GT
1B3GT H.V. RECT.
PICTURE TUBE V22 7JP4
ON - OFF SW. ON VOL. CONT.
B+
B+ +
B-
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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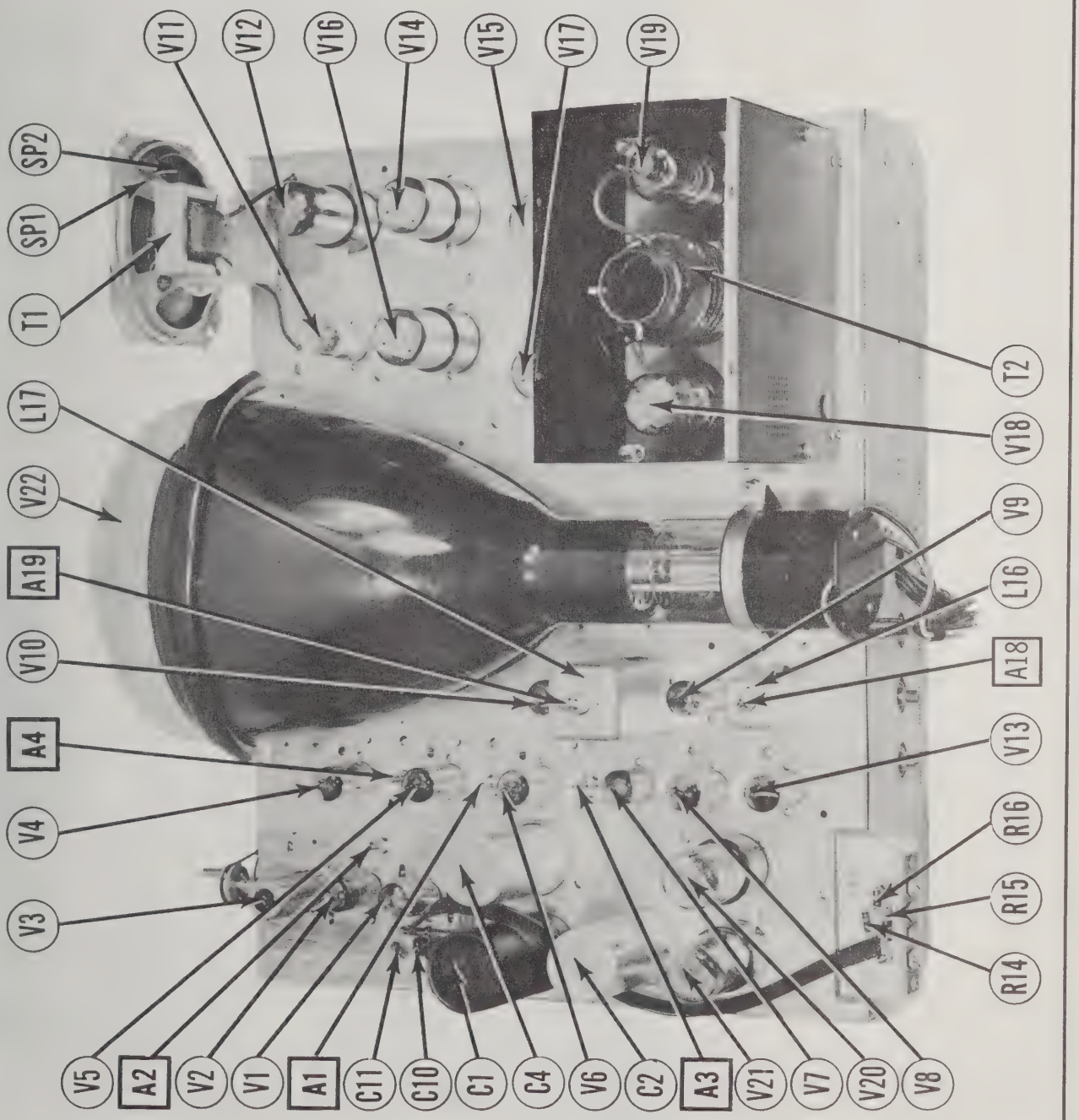
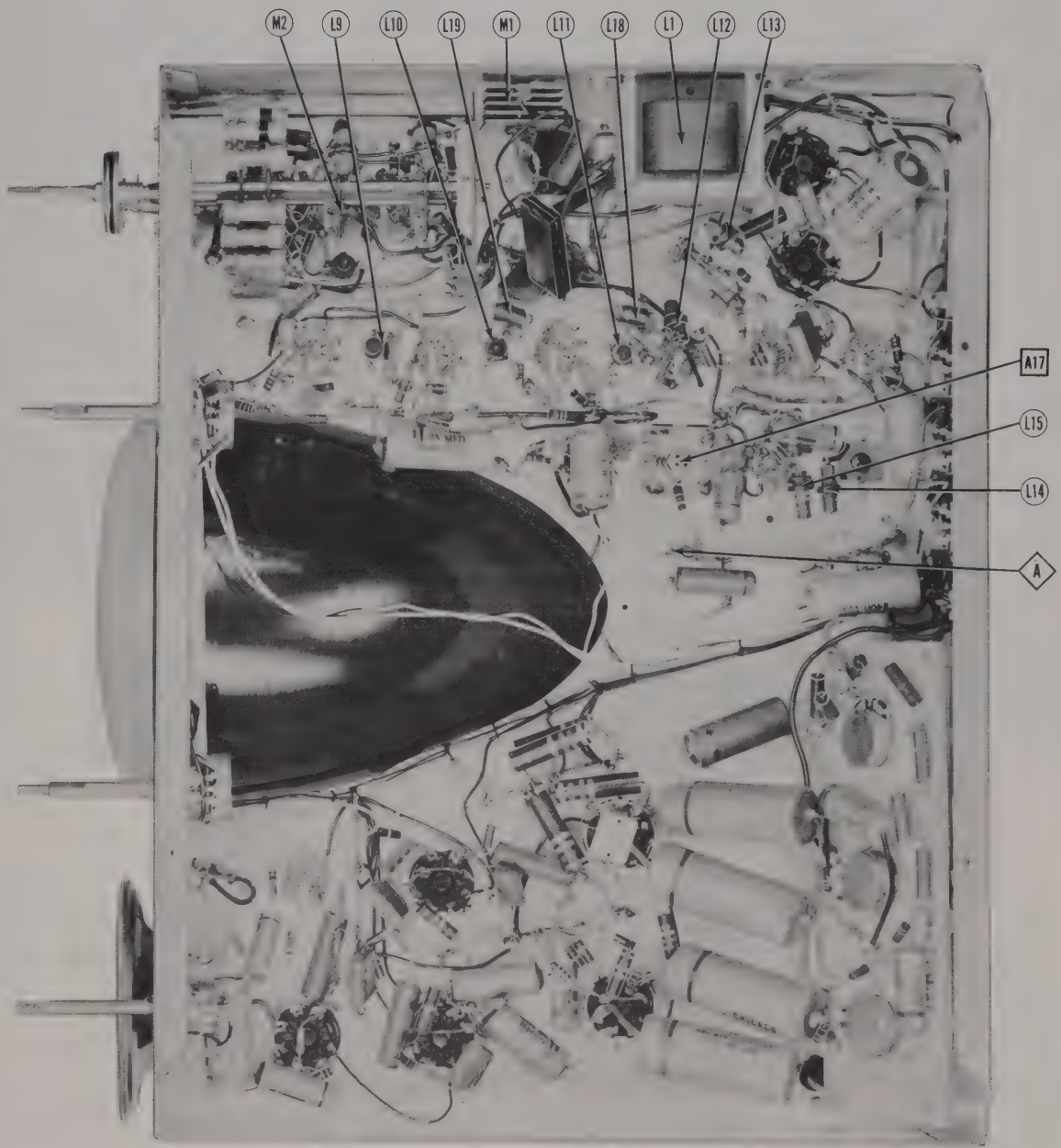
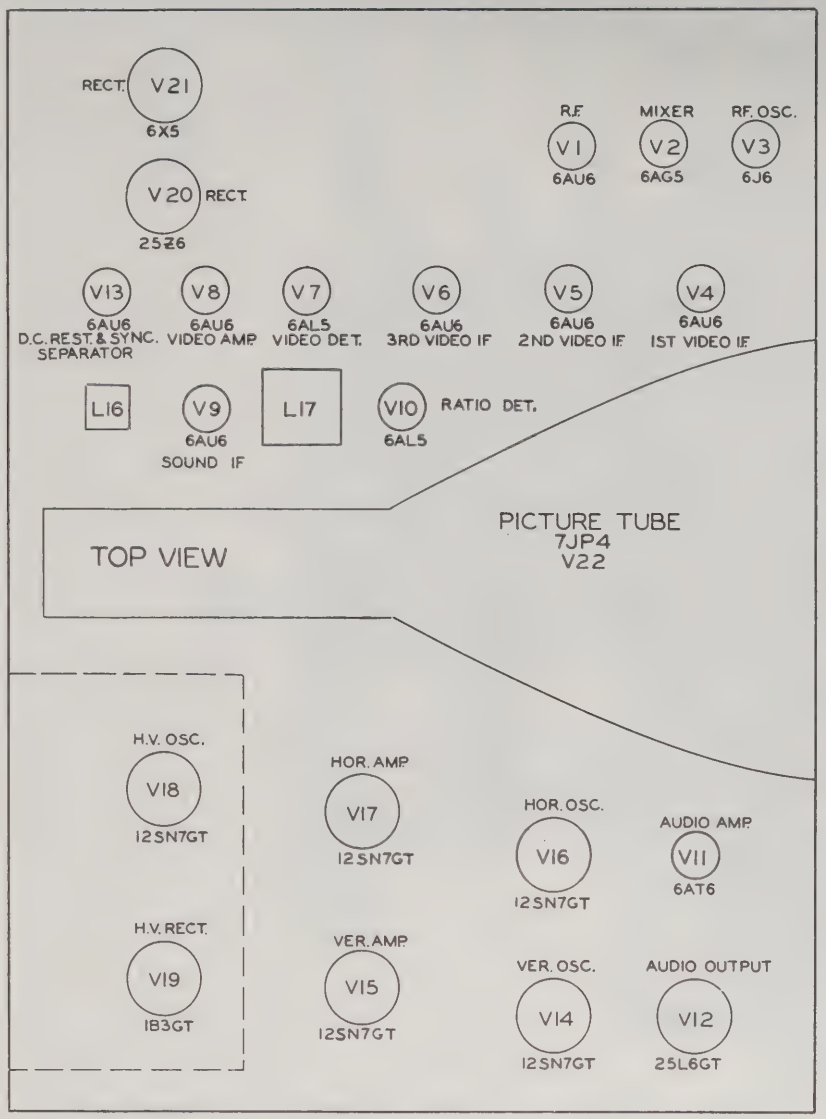
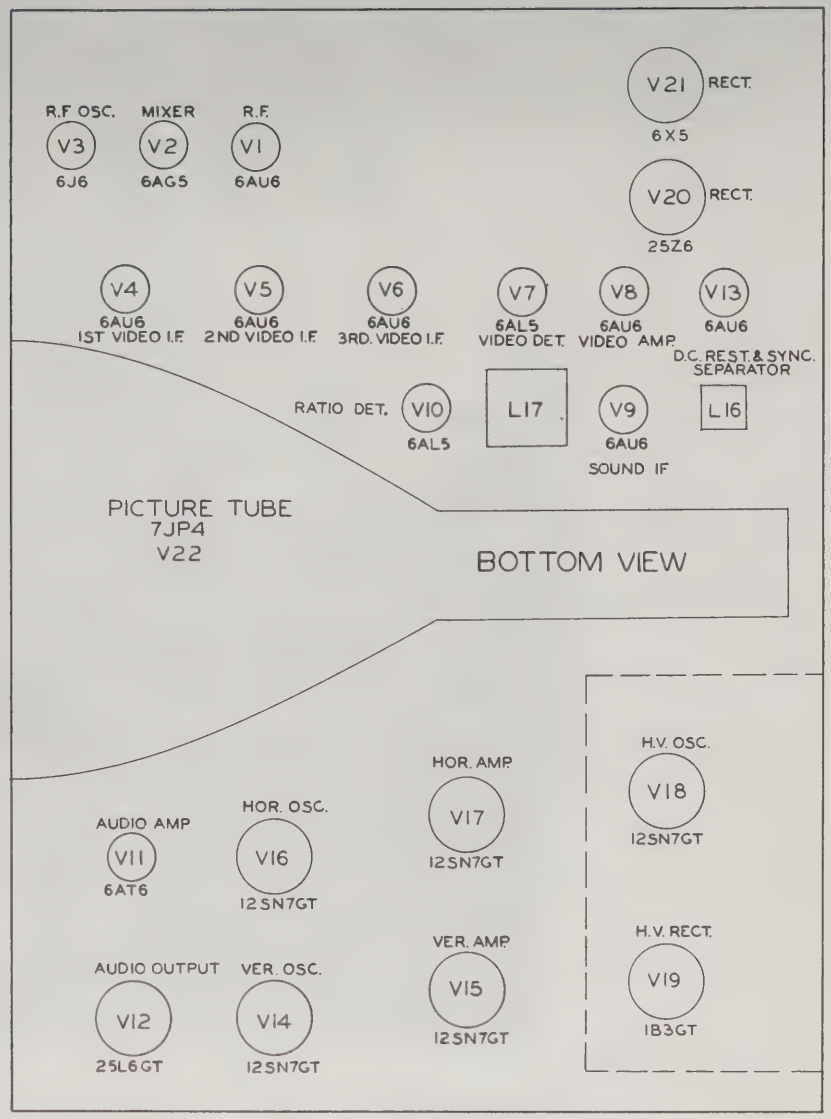


CHASSIS TOP VIEW

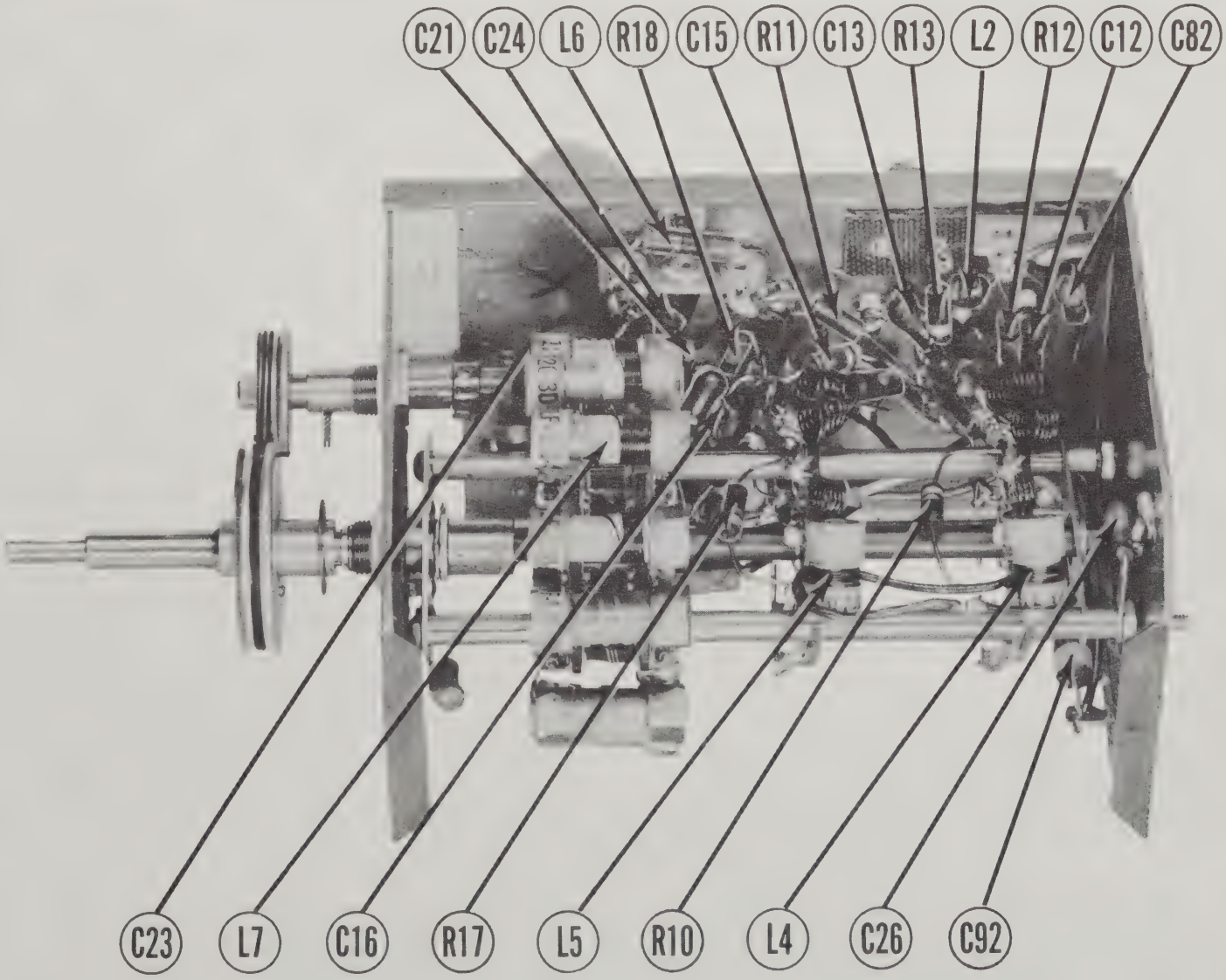


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

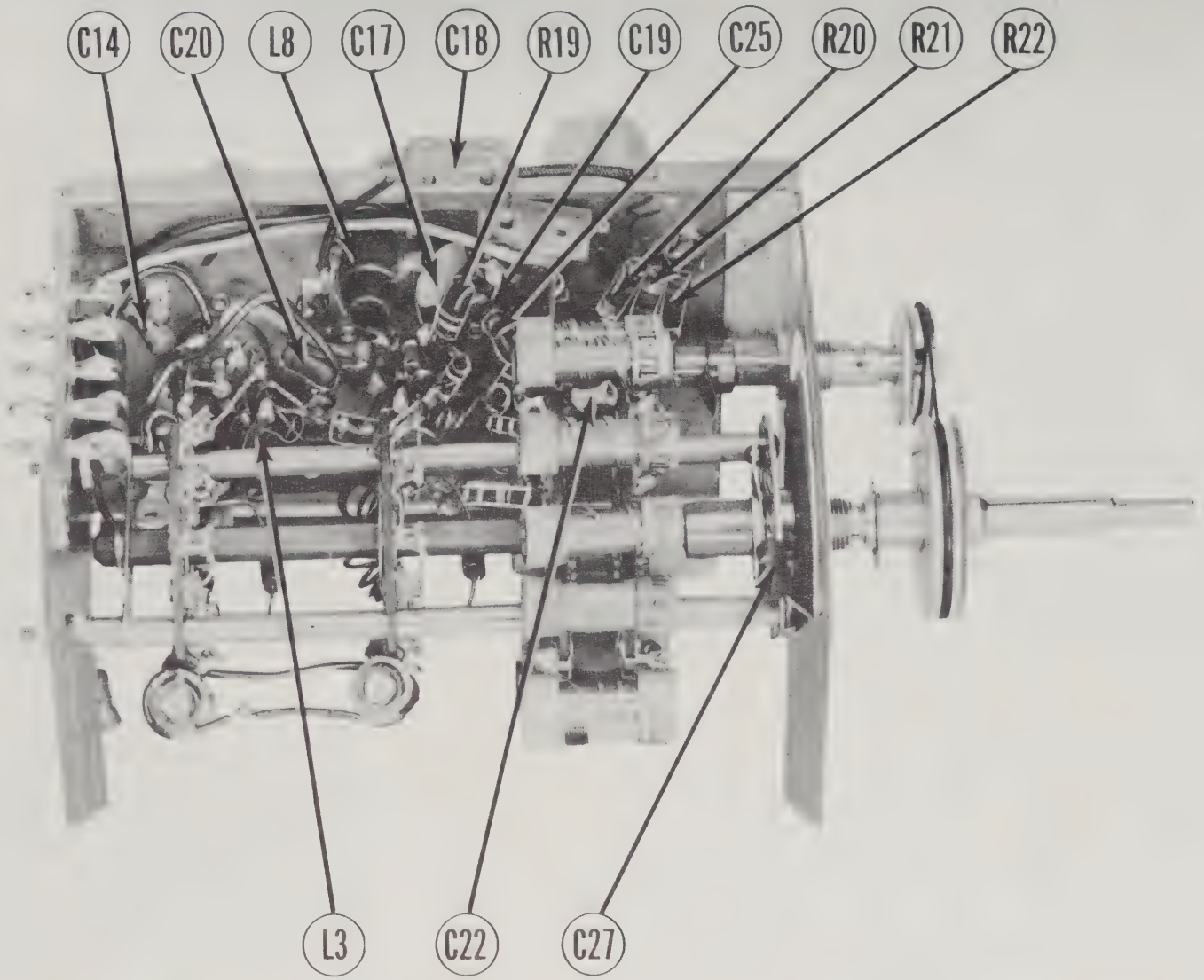




TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AU6	-.1VDC	0V.	31VAC	25VAC	117VDC	117VDC	.7VDC		
2	6AG5	-3.2VDC	0V.	19VAC	25VAC	122VDC	122VDC	0V.		
3	6J6	125VDC	125VDC	19VAC	12VAC	-5.2VDC§	-3.4VDC§	1.6VDC		
4	6AU6	-.2VDC	0V.	31VAC	37VAC	125VDC	125VDC	.7VDC		
5	6AU6	-.2VDC	0V.	37VAC	43VAC	125VDC	125VDC	.7VDC		
6	6AU6	0V.	0V.	43VAC	50VAC	127VDC	127VDC	1VDC		
7	6AL5	0V.	0V.	50VAC	56VAC	1.7VDC	-0V.	-.4VDC		
8	6AU6	-.1VDC	0V.	62VAC	67VAC	80VDC	157VDC	0V.		
9	6AU6	0V.	0V.	62VAC	56VAC	120VDC	120VDC	1.1VDC		
10	6AL5	0V.	0V.	19VAC	25VAC	.4VDC	0V.	-.4VDC		
11	6AT6	-.7VDC	0V.	43VAC	37VAC	0V.	0V.	43VDC		
12	25L6GT	0V.	45VAC	128VDC	126VDC	-3.2VDC	0V.	68VAC	1.8VDC	
13	6AU6	0V.	3.7VDC	67VAC	73VAC	55VDC	125VDC	3.7VDC		
14	12SN7GT	0V.	100VDC*	3.2VDC*	-14VDC	30VDC* 70VDC*	3.2VDC*	80VAC	68VAC	
15	12SN7GT	-4VDC *	270VDC*	12VDC*	0V.	190VDC*	12VDC*	93VAC	80VAC	
16	12SN7GT	0V.*	105VDC*	3.2VDC*	-5VDC*	20VDC* 80VDC*	3.2VDC*	37VAC	25VAC	
17	12SN7GT	-17VDC*	290VDC*	0V.*	-4VDC*	270VDC*	0V.*	110VAC	93VAC	
18	12SN7GT	-63VDC†	250VDC†	117VAC	-63VDC†	250VDC†	117VAC	110VAC	117VAC	
19	1B3GT	DO NOT MEASURE								
20	25Z6GT	0V.	98VAC	130VDC	260VDC	-145VDC	0V.	73VAC	117VAC	
21	6X5GT	0V.	0V.	260VDC	0V.	260VDC	0V.	6VAC	400VDC	
22	7JP4	12VAC	50VDC	3.7VDC		#		#	#	
23		Pin 9 #	Pin 10 #	Pin 11 #	Pin 12	Pin 13	Pin 14 6VAC			

* Measured From Pin 3-V17
† Measured From Pin 8-V20
# Do Not Measure.
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AU6	3.2Meg	0Ω	10Ω	8Ω	1200Ω*	1200Ω*	100Ω		
2	6AG5	1 Meg	0Ω	5Ω	8Ω	1K*	1K*	0Ω		
3	6J6	60Ω*	60Ω*	5Ω	3Ω	27K	27K	47Ω		
4	6AU6	2.2Meg	0Ω	10Ω	13Ω	360Ω*	360Ω0	82Ω		
5	6AU6	2.2Meg	0Ω	13Ω	16Ω	210Ω*	210Ω*	82Ω		
6	6AU6	0Ω	0Ω	16Ω	18Ω	60Ω*	60Ω*	82Ω		
7	6AL5	0Ω	47K	18Ω	20Ω	1.5K	0Ω	8.2K		
8	6AU6	1 Meg	0Ω	23Ω	25Ω	6.8K*	25K†	0Ω		
9	6AU6	1Ω	0Ω	23Ω	20Ω	530Ω*	530Ω*	82Ω		
10	6AL5	INF.	INF.	5Ω	8Ω	15K	0Ω	15K		
11	6AT6	10 Meg	0Ω	18Ω	16Ω	0Ω	0Ω	400K*		
12	25L6GT	0Ω	18Ω	400Ω*	5K*	390K	INF.	30Ω	68Ω	
13	6AU6	1 Meg	6.8K	25Ω	27Ω	220K*	60Ω*	6.8K		
14	12SN7GT	11.2K#	100K†	2.2K#	1.4Meg#	3.3Meg † 13.3Meg†	2.2K#	35Ω	30Ω	
15	12SN7GT	4.7Meg#	820K†	20K#	150K#	820K†	20K#	38Ω	35Ω	
16	12SN7GT	5K#	110K†	2.2K#	470K#	1.2Meg † 6.2Meg †	2.2K#	16Ω	8Ω	
17	12SN7GT	5 Meg#	47K†	1.2K#	5 Meg #	47K†	1.2K#	40Ω	38Ω	
18	12SN7GT	7.5K	700Ω§	0Ω††	7.5K	800Ω§	0Ω††	40Ω	42Ω	
19	1B3GT	INF.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	680Ω
20	25Z6GT	INF.	32Ω	22K	180K	400K	INF.	27Ω	42Ω	
21	6X5GT	INF.	0Ω	180KΩ	INF.	180KΩ	INF.	1.5Ω	45K	
22	7JP4	3Ω	155KΩ	6.8K	INF.	4.4 Meg 6.6 Meg	INF.	21 Meg	21 Meg	
23		Pin 9 16 Meg	Pin 10 21 Meg	Pin 11 21 Meg	Pin 12 INF.	Pin 13 INF.	Pin 14 1.5Ω			

* Measured From Pin 3-V20
† Measured From Pin 8-V21
# Measured From Pin 5-V20
§ Measured From Pin 4-V20
†† Measured From Pin 8-V20

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Sockets connections are shown as bottom views.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at maximum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate shock hazard, disable high voltage by unsoldering the lead feeding B+ to high voltage oscillator tube 12SN7 (V18). Use an isolation transformer when available as one side of the line is connected to chassis.

VIDEO IF ALIGNMENT

A tube shield slipped over the mixer tube, but not grounded, makes a practical and convenient method of injecting the signal from the signal generator. The signal generator output is adjusted to give a reading of approximately -1 volt at Pin 7 6AL5 (V7) with AGC line grounded.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1		High side to ungrounded tube shield (See prealignment instructions). Low side to chassis.	34.8MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V7). Common lead to chassis.	A1,A2	Adjust for maximum deflection. Reduce signal gen. output if necessary to hold about -1 volt reading.
2		"	36.9MC (No mod.)	"	"	A3,A4	"

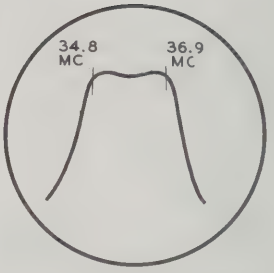


FIG. 1

OVERALL IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3		High side to ungrounded tube shield (See above). Low side to chassis.	35MC (10MC sweep)	34.8MC & 36.9MC	Any	Vertical amp. to Pin 1 6AU6 (V8). Low side to chassis.		Check response pattern to see that markers appear as per Fig. 1. If not, make slight adjustments of A1, A2, A3 and A4.

RF OSCILLATOR ALIGNMENT

The RF Amplifier and mixer lines are pre-set at the factory and due to their stability normally do not require adjustment. Since Channel 2 Oscillator Coil is in parallel with all other osc. coils at their respective channels. Channel 2 must be aligned first. If Channel 2 is readjusted at any time, it will be necessary to realign all the other channels.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4	2 - 150Ω carbon res. in series with each sig.gen. lead.	Across "Distant" antenna terminal strip.	57MC (10MC sweep)	55.25MC (Picture) 59.75MC (Sound)	2	Vert. Amp. to Pin 1 6AU6 (V8). Low side to chassis.	A5	Adjust to place picture marker at 50% point on pattern as per Fig. 2. Check sound carrier to see if it appears at proper point as per Fig. 2.
5	"	"	63MC (10MC sweep)	61.25MC (Picture) 65.75MC (Sound)	3	"	A6	"
6	"	"	69MC (10MC sweep)	67.25MC (Picture) 71.75MC (Sound)	4	"	A7	"
7	"	"	73MC (10MC sweep)	77.25MC (Picture) 81.75MC (Sound)	5	"	A8	"
8	"	"	85MC (10MC sweep)	83.25MC (Picture) 87.75MC (Sound)	6	"	A9	"
9	"	"	177MC (10MC sweep)	175.25MC (Picture) 179.75MC (Sound)	7	"	A10	"
10	"	"	183MC (10MC sweep)	181.25MC (Picture) 185.75MC (Sound)	8	"	A11	"
11	"	"	189MC (10MC sweep)	187.25MC (Picture) 191.75MC (Sound)	9	"	A12	"
12	"	"	195MC (10MC sweep)	193.25MC (Picture) 197.75MC (Sound)	10	"	A13	"
13	"	"	201MC (10MC sweep)	199.25MC (Picture) 203.75MC (Sound)	11	"	A14	"
14	"	"	207MC (10MC sweep)	205.25MC (Picture) 209.75MC (Sound)	12	"	A15	"
15	"	"	213MC (10MC sweep)	211.25MC (Picture) 215.75MC (Sound)	13	"	A16	"

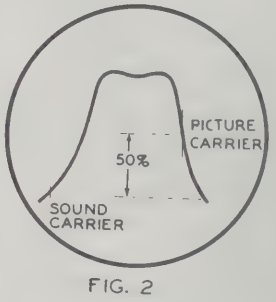
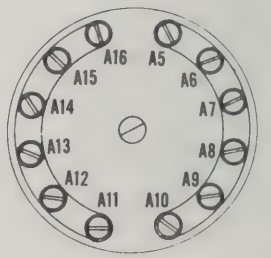


FIG. 2

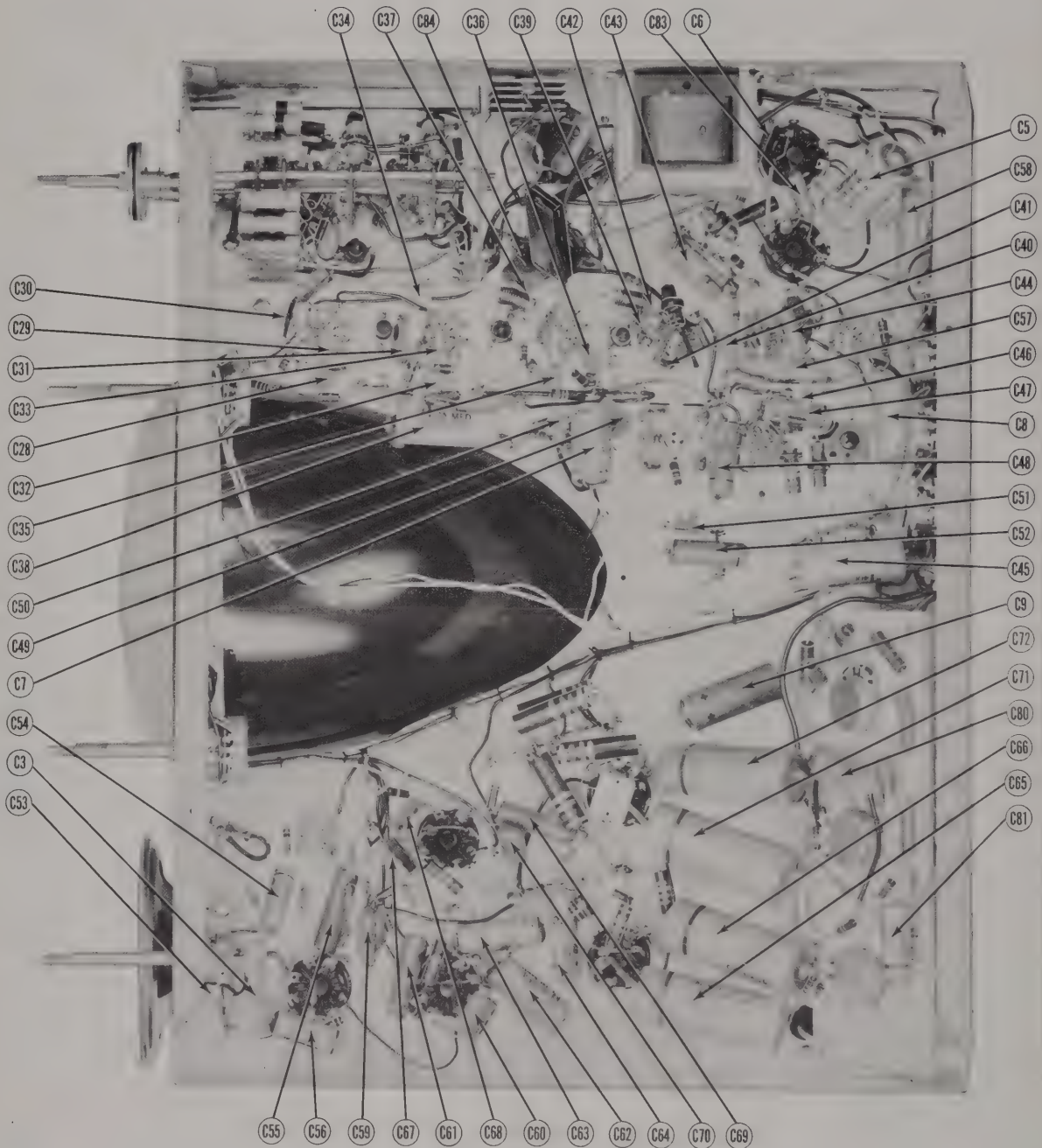
SOUND IF ALIGNMENT

When adjusting the 4.5MC trap and the primary of the ratio detector coils (A17 & A18), attenuate signal generator so VTVM reading is held to approximately -3 to -4 volts.

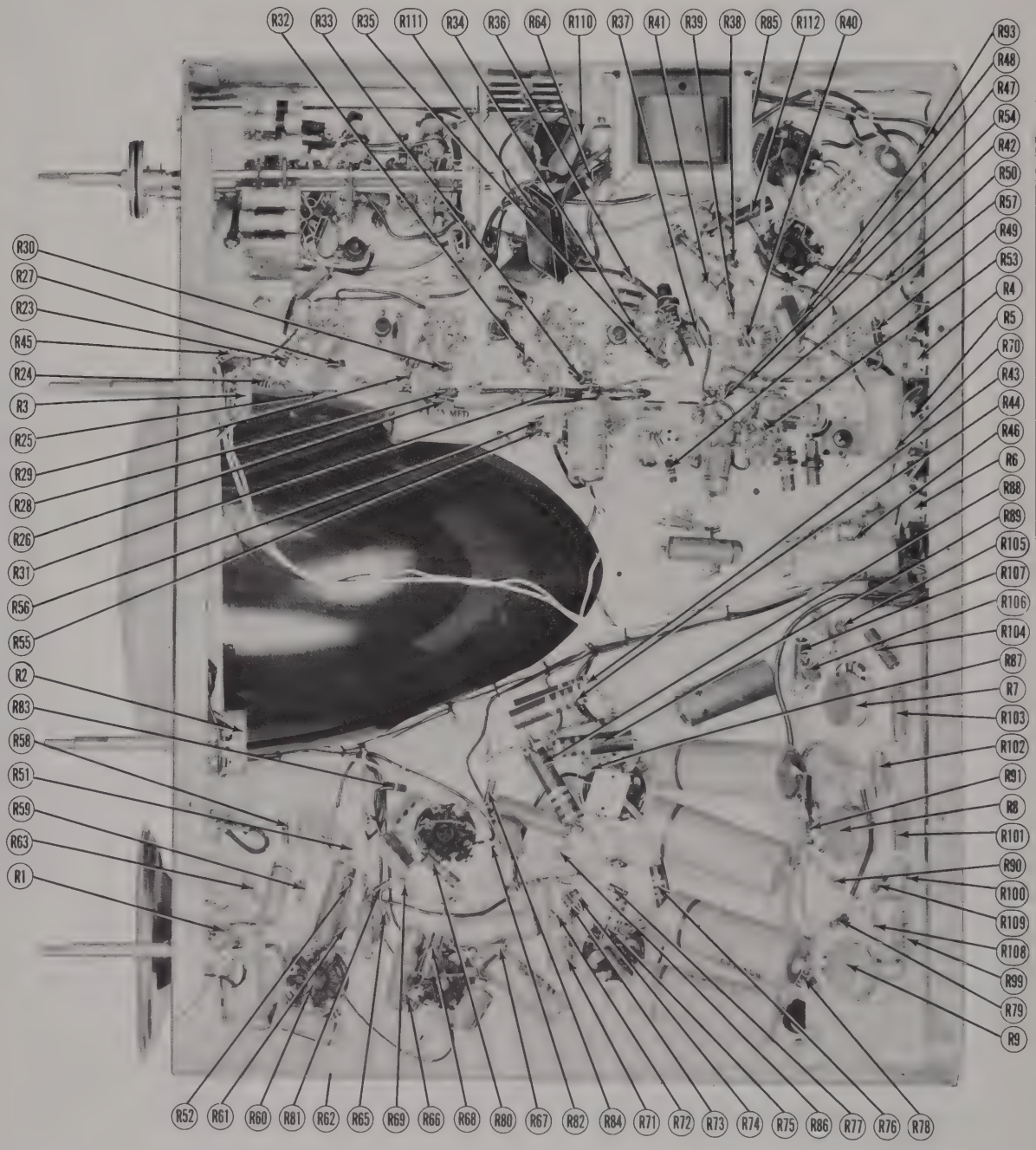
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16	5000MMF	High side to Pin 1 6AU6 (V8). Low side to chassis.	4.5MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V10). Common lead to chassis.	A17, A18	Adjust for maximum deflection.
17	5000MMF	"	"	"	DC probe to Point (A). Common lead to chassis	A19	Adjust for zero reading. A positive & negative reading can be obtained on either side of the correct setting.



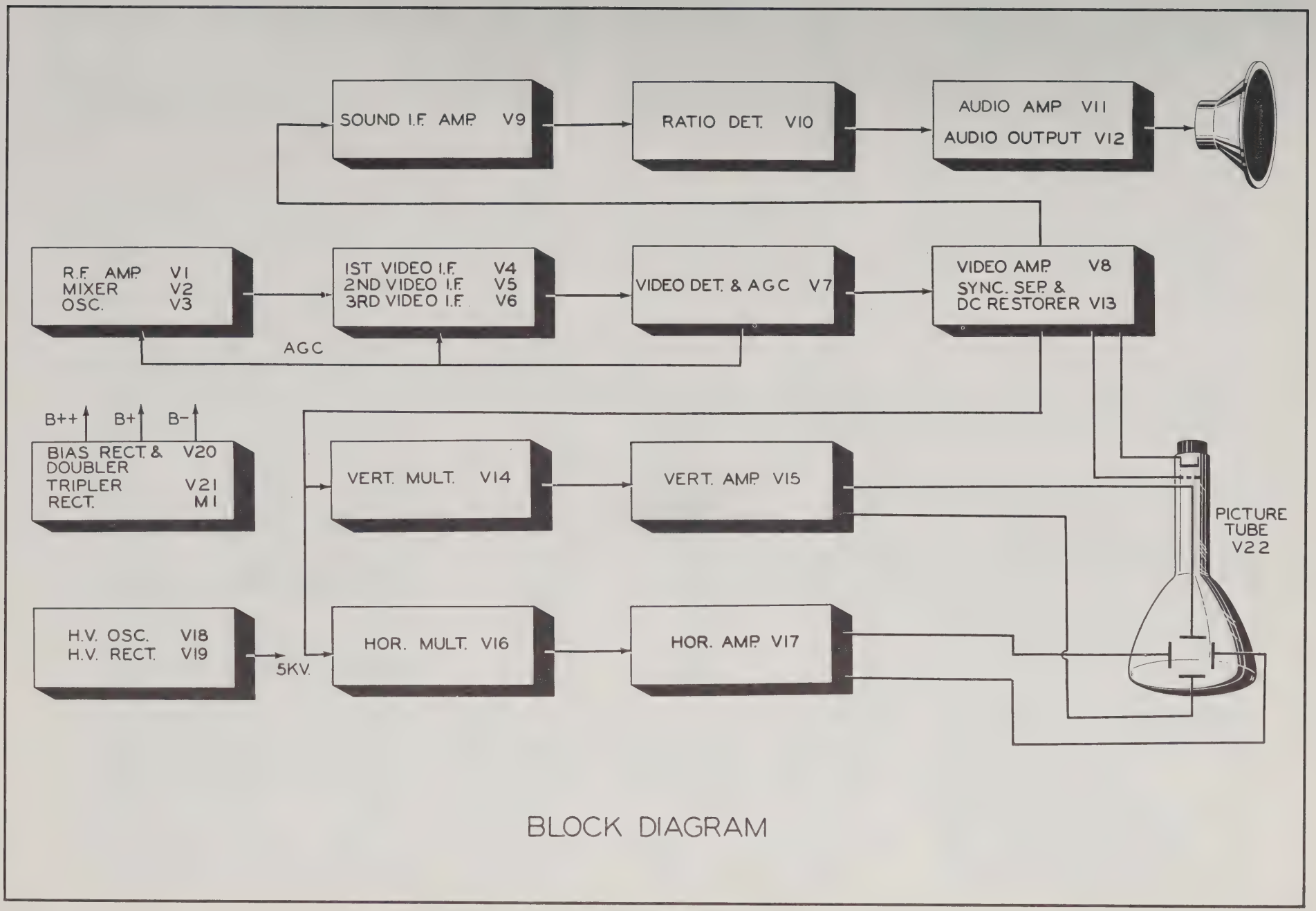
OSC. ALIGNMENT POINTS



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6AU6	7BK	
V2	Mixer		6AJ8	7BD	
V3	Oscillator		6J6	7BF	
V4	1st Video IF		6AU6	7BK	
V5	2nd Video IF		6AU6	7BK	
V6	3rd Video IF		6AU6	7BK	
V7	Video Detector		6AL5	6BT	
V8	Video Amp.		6AU6	7BK	
V9	Sound IF		6AU6	7BK	
V10	Ratio Detector		6AL5	6BT	
V11	Audio Amp.		6AT6	7BT	
V12	Audio Output		25L6GT	7AC	
V13	Sync. Sep. & D.C. Res.		6AU6	7BK	
V14	Vertical Multiv.	12SN7GT	12SN7GT	9BJ	
V15	Vertical Amp.	12SN7GT	12SN7GT	9BJ	
V16	Horizontal Mult.	12SN7GT	12SN7GT	9BJ	
V17	Horizontal Amp.	12SN7GT	12SN7GT	9BJ	
V18	H. V. Osc.	12SN7GT	12SN7GT	9BJ	
V19	H. V. Rectifier	1B3GT	1B3GT	3C	
V20	Bias Rectifier & Doubler	25Z6GT	25Z6GT	7Q	
V21	Trigger	6AS6T/G	6AS6T/G	6S	
V22	Picture Tube	7JP4	7JP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	350	TCE-101D		UP4445		TVL-64	◆ Doubler
B	40	350						▲ Filter
C2A	30	450	TCE-102D				TVL-54	◆ "
B	15	450						■ "
C	30	150						▲ "
C3	30	150	TCE-103D	PRS150/30	BR3015	M-30-150	UT-301	◆ "
C4A	125	150	TCE-100D					▲ "
B	100	150						
C5	30	150	TCE-103D	PRS150/30	BR3015	M-30-150	UT-301	
C6	30	150	TCE-103D	PRS150/30	BR3015	M-30-150	TVA-18	
C7	4	25	TCE-105D	BR415/4	BR415	M-4-450	TVA-13	Stabilizing Cap.
C8	10	25	TCE-104D	PRS25/10	BR102A	M-10-25	TVA-5	Sync. Sep. Cath. Byp.
C9	10	250	TCE-106D	PRS250/12	BR1225	M-10-350	UT-122	Decoupling
C10	300		TCC-501-10					Ant. Coupling-Note 5 Cer. "
C11	300		TCC-501-10					RF Coupling-Note 1 Cer.
C12	360		TCC-501-10					RF Screen Bypass "
C13	360		TCC-501-10					Note 1 "
C14	360		TCC-501-10					RF Fil. Bypass " Note 1 "
C15	.82		TCC-Q82SP					RF Coupling "
C16	22		TCC-22-12					Mixer Grid Cap. "
C17	5000		TCC-502-SP					Mixer Decoupling. "
C18	270	500	TCM-271-13					IF Coupling "
C19	360		TCC-501-10					RF Bypass-Note 1 "
C20	360		TCC-501-10					Mixer Fil. Byp. " Note 1 "
C21	.82		TCC-1.5-11					Switch Bypass " Note 3 "
C22	4.7		TCC-4.7-11					Osc. Coupling-Note 2 "
C23	4.7		TCC-4.7-11					Osc. Feedback Cer.
C24	360		TCC-501-10					Osc. Feedback "
C25	360		TCC-501-10					Osc. Fil. Byp. " Note 1 "
C26	360		TCC-501-10					Switch Bypass " Note 3 "
C27	360		TCC-501-10					
C28	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	AGC Filter "
C29	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	1st V. Decoupling "
C30	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	1st V. Fil. Byp. "
C31	5000	500	TCM-271-13	1468-00025	5W5T25	MO.5-325	1FM-325	IF Coupling
C32	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	AGC Filter "
C33	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	2nd V. Decoupling "
C34	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	2nd V. Fil. Byp. "
C35	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	3rd V. Cath. Bypass "
C36	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	3rd V. Decoupling "
C37	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	3rd V. Fil. Bypass "
C38	.25	400	TCP-254-4	P488-025	GT4S25	ST-4-25	TC-2	AGC Filter
C39	1500		TCC-152-11	1467-0015	1W5D15	MW.5-215	1FM-215	IF Coupling
C40	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	DAGC Diode Filter "
C41	5.6		TCC-5-11	1469-000005	SR5V5	MO5.5-55	MS-56	Diode Filter-Note4 "
C42	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	Det. Fil. Bypass "
C43	.05	400	TCP-503-4	P488-05	GT4S5	ST-4-05	TM-15	Video Coupling
C44	5000	300	TCC-502-11	1467-005	1D5D5	MW.5-25	1FM-25	V. Amp. Screen Byp.
C45	5000	400	TCP-254-4	P488-025	GT4P25	ST-4-25	TC-2	Video Coupling
C46	2.2		TCC-2.2-11					Sound IF Coupling "
C47	.02	400	TCP-203-4	P488-02	GT4S2	ST-4-02	TM-12	1st S. IF Cath. Byp.
C48	.02	400	TCP-203-4	P488-02	GT4S2	ST-4-02	TM-12	1st S. IF Decoupling
C49	330	500	TCM-331-5	1468-00035	5W5T3	MO.5-33	1FM-335	Diode Load Cap.
C50	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass "
C51	1500		TCC-152-11	1467-0015	1W5D15	MW.5-215	1FM-215	De-emphasis "
C52	.02	400	TCP-203-4	P488-02	GT4S2	ST-4-02	TM-12	Audio Coupling
C53	5000		TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	Vol. Cont. Iso. "
C54	.002	600	TCP-202-4	P688-002	GT6D2	ST-6-002	TM-22	Audio Coupling
C55	.01	600	TCP-103-10	P688-01	GT6S1	ST-6-01	TM-11	
C56	.02	400	TCP-203-4	P488-02	GT4S2	ST-4-02	TM-12	Output Plate Bypass
C57	.05	400	TCP-503-4	P488-05	GT4S5	ST-4-05	TM-15	Video Coupling
C58	.05	600	TCP-503-10	P688-05	GT6S5	ST-6-05	TM-15	Sync. Coupling
C59	5000	300	TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	Integrator
C60	5000	300	TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	"
C61	.01	600	TCP-103-10	P688-01	GT6S1	ST-6-01	TM-11	Vert. Mult. Feedback
C62	.1	600	TCP-104-10	P688-1	GT6P1	ST-6-1	TM-1	Vert. Coupling
C63	.05	600	TCP-503-10	P688-05	GT6S5	ST-6-05	TM-15	Vert. Discharge
C64	.02	600	TCP-203-10	P688-02	GT6S2	ST-6-02	TM-12	Vert. Coupling
C65	.005	6000	TCP-502-6K	7584-005	D5TH60D5		TVH-256	"
C66	.005	6000	TCT-502-6K	7584-005	D5TH60D5		TVH-256	" " Differentiator
C67	220	500	TCM-221-4					Hor. Mult. Feedback
C68	100	500	TCM-101-11	1468-0001	5W5T1	MO.5-31	1FM-31	Hor. Coupling
C69	.01	600	TCP-103-10	P688-01	GT6S1	ST-6-01	TM-11	Hor. Discharge
C70	100	500	TCM-101-11	1468-0001	5W5T1	MO.5-31	1FM-31	Hor. Coupling
C71	.005	6000	TCP-502-6K	7584-005	D5TH60D5		TVH-256	"
C72	.005	6000	TCP-502-6A	7584-005	D5TH60D5		TVH-256	"
C73	.05	600	TCP-503-10	P688-05	GT6S5	ST-6-05	TM-15	H. V. Osc. Plate Decoup. Fixed Trimmer
C74	750	500	TCM-751-8	1468-00075				"
C75	360	500	TCM-361-6	1469-00035				"
C76	1500		TCC-152-7	1467-0015	1W5D15	MW.5-215	1FM-215	H.V. Osc. Grid Cap.-Cer.
C77	.1	600	TCP-104-10	P688-1	GT6P1	ST-6-1	TM-1	H.V. Osc. Fil. Bypass
C78	.0005	6000	TCC-101-10K	7584-0005	D5TH60D5		TVM-351	H.V. Filter
C79	.0005	6000	TCC-501-10K	7584-0005	D5TH60D5		TVM-351	H.V. Filter
C80	.05	600	TCP-503-10	P688-05	GT6S5	ST-6-05	TM-15	Hor. Centering Byp.
C81	.01	400	TCP-103-10	P488-01	GT4S1	ST-4-01	TM-11	ACC Anode Filter-Note 3
C82	360		TCC-501-10	1468-00035	5W5T4	MO5-34	1FM-335	ACC Filter -Cer.
C83	5000	300	TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	Line Filter
C84	5000	300	TCC-502-SP	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass-Note 3

Note 1-Some models use 500 MMF. in this application.
Note 2-Some models use 1.8 MMF. in this application.
Note 3-Not used in all models.
Note 4-Some models use 5 MMF. in this application.
Note 5-Some models use 5000 MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	TVC-100D	D13-133	M-60-Z	Volume Control
B	Shaft		Not Reg.	A	Not Req.	Attach to R1A per instructions
C	Switch		"	41	SW-A	" " "
R2A	1 Meg.	½				Vertical Hold Control } Dual
B	250KΩ	½	TVC-102D			Horizontal Hold Control }
R3A	25KΩ	½				Contrast Control } Dual
B	25KΩ	½	TVC-101D			Brilliance " }
R4A	5 Meg.	½	TVC-103D	D11-141		Width Control
B	Shaft		Not Reg.	A		Attach to R4A per instructions.
R5A	10 Meg.	½	TVC-104D	D11-143		Height Control
B	Shaft		Not Reg.			Attach to R5A per instructions
R6A	5 Meg.	2	TVC-103D	D11-141		Vertical Linearity Control
B	Shaft		Not Reg.	A		Attach to R6A per instructions
R7	5 Meg.	½	TVC-105D			Focus Control-See Note
R8	5 Meg.	½	TVC-105D			Horizontal Centering Control
R9	25 Meg.	½	TVC-125D			Vertical Centering Control

Note-Some models use 2.5 Meg. 2 control and omit the 4.7 Meg. 2 shunt resistor across the focus control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ARE 20% TOL. UNLESS OTHERWISE SPECIFIED	
R10	47002	½	TRC-472-3		Yl.-Vi.-Red	RF Shunt ±5%
R11	1000Ω	½	TRC-102-1	BTS-1000	sr.-Blk.-Red	R8 Decoupling
R12	1 Meg.	½	TRC-105-1	BTS-1 Meg.	Br.-Blk.-Grn.	RF Grid
R13	822	½	TRC-822-2		Gray-Red-Blk.	RF Cathode ±10%
R14	5602	½	TRC-561-1		Grn.-Blue-Br.	Attenuator Network
R15	5602	½	TRC-561-1		Grn.-Blue-Br.	" "
R16	3902	½	TRC-391-1		Or.-White-Br.	" "
R17	47002	½	TRC-472-1		Yl.-Vi.-Red	Mixer Coil Shunt ±5%
R18	1 Meg.	½	TRC-105-1	BTS-1 Meg.	Br.-Blk.-Grn.	Mixer Grid
R19	1000Ω	½	TRC-102-1	BTS-1000	Br.-Blk.-Red	Mixer Decoupling
R20	27KΩ	½	TRC-273-2		Red-Vi.-Or.	Osc. Grid "
R21	27KΩ	½	TRC-273-2		Red-Vi.-Or.	" " ±10%
R22	47Ω	½	TRC-470-1		Yl.-Vi.-Blk.	Osc. Cathode
R23	11KΩ	½	TRC-113-3		Br.-Grn.-Or.	1st Video IF Grid ±5%
R24	150Ω	½	TRC-151-1		Br.-Grn.-Br.	AGC- Network
R25	150Ω	½	TRC-151-1		Br.-Grn.-Br.	" "
R26	150Ω	½	TRC-151-1		Br.-Grn.-Br.	" "
R27	822	½	TRC-822-3		Gray-Red-Blk.	1st Video IF Cathode ±5%
R28	150Ω	½	TRW-151-1	BW-½-150	Br.-Grn.-Br.	1st Video IF Decoupling
R29	10KΩ	½	TRW-103-3		Br.-Blk.-Or.	2nd Video IF Grid ±5%
R30	822	½	TRW-822-2		Gray-Red-Blk.	2nd Video IF Cathode ±10%
R31	150Ω	½	TRW-151-1	BW-½-150	Br.-Grn.-Br.	2nd Video IF Decoupling
R32	11KΩ	½	TRW-113-3		Br.-Br.-Or.	3rd Video IF Grid ±5%
R33	822	½	TRW-822-2		Gray-Red-Blk.	3rd Video IF Cathode ±10%
R34	47KΩ	½	TRW-473-1	BTS-47K	Yl.-Vi.-Or.	AGC Diode Load
R35	2.2 Meg.	½	TRW-225-3	BTS-2.2Meg. ±5%	Red-Red-Grn.	AGC Network
R36	100KΩ	½	TRW-104-1	BTS-100K	Br.-Blk.-Or.	Voltage Divider Network
R37	1500	½	TRW-152-1	BTS-1500	Br.-Grn.-Red	" "
R38	8200Ω	½	TRW-822-3	BTS-8200 ±5%	Gray-Red-Red	Video Detector Load ±5%
R39	1 Meg.	½	TRW-105-3	BTS-1 Meg. ±5%	Br.-Blk.-Grn.	Video Amp. Grid ±5%
R40	10KΩ	½	TRW-103-1	BTS-10K	Br.-Blk.-Or.	Bias Network
R41	1 Meg.	½	TRW-105-3	BTS-1Meg. ±5%	Br.-Blk.-Grn.	" ±5%
R42	6800Ω	1	TRW-682-8	BTA-6800 ±5%	Blue-Gray-Red	Video Amp. Plate ±5%
R43	47KΩ	2	TRW-473-8	BT-2-47K	Yl.-Vi.-Or.	Filter ±10%
R44	47KΩ	2	TRW-473-8	BT-2-47K	Yl.-Vi.-Or.	" ±10%
R45	4700Ω	½	TRC-472-1	BTS-4700	Yl.-Vi.-Red	Bleeder
R46	150KΩ	½	TRC-154-1	BTS-150K	Br.-Grn.-Br.	Picture Tube Cathode
R47	1 Meg.	½	TRC-105-3	BTS-1 Meg. ±5%	Br.-Blk.-Grn.	Sync. Seperator Grid ±5%
R48	6802Ω	2	TRC-682-1	BTS-6800	Blue-Gray-Red	Sync. Seperator Cathode
R49	220KΩ	2	TRC-224-2	BTS-220K	Red-Red-Yl.	Sync. Seperator Plate ±10%
R50	180KΩ	2	TRC-184-1	BTS-180K	Br.-Gray-Yl.	Phase Correction
R51	5602	2	TRC-561-2	BTS-560	Grn.-Blue-Br.	Bias Voltage Divider ±10%
R52	5602	2	TRC-561-2	BTS-560	Grn.-Blue-Br.	" ±10%
R53	922	½	TRC-920-2		Gray-Red-Blk.	Sound IF Cathode ±10%
R54	4702	½	TRC-471-3	BTS-470 ±5%	Yl.-Vi.-Br.	Sound IF Decoupling ±5%

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	IDENTIFICATION CODES
R55	15KΩ	½	TRC-153-3	BTS-15K ±5%	Br.-Grn.-Or.	Ratio Detector Diode Load ±5%
R56	15KΩ	½	TRC-153-3	BTS-15K ±5%	Br.-Grn.-Or.	" " " ±5%
R57	47KΩ	½	TRC-473-1	BTS-47K	Yl.-Vi.-Or.	De-emphasis
R58	1/2 Meg.	½	TRC-106-1	BTS-10 Meg.	Br.-Blk.-Blue	Audio Grid
R59	390KΩ	½	TRC-394-2	BTS-390K	Or.-White-Yl.	Audio Plate ±10%
R60	470KΩ	½	TRC-474-2	BTS-470K	Yl.-Vi.-Yl.	Output Grid ±10%
R61	6.8 Meg.	½	TRC-685-2	BTS-6.8 Meg.	Blue-Gray-Grn.	Bias Network ±10%
R62	682	½	TRC-680-1	BW-½-68	Blue-Gray-Blk.	Output Cathode
R63	47002	½	TRC-472-1	BTS-4700	Yl.-Vi.-Red	Filter
R64	1502	½		BW-1-150	Br.-Grn.-Br.	" ±10%
R65	47002	½	TRC-472-1	BTS-4700	Yl.-Vi.-Red	Integrator
R66	47002	½	TRC-472-1	BTS-4700	Yl.-Vi.-Red	"
R67	1000Ω	1	TRC-102-1	BTS-1000	Br.-Blk.-Red	Vertical Osc. Cathode
R68	100KΩ	1	TRC-104-4	BTA-100K ±5%	Br.-Blk.-Yl.	Vertical Osc. Plate ±5%
R69	390KΩ	½	TRC-394-2	BTS-390K	Or.-White-Yl.	Vertical Osc. Grid ±10%
R70	3.3 Meg.	½	TRC-335-1	BTS-3.3 Meg.	Or.-Or.-Grn.	Vertical Osc. Plate
R71	4.7 Meg.	½	TRC-475-1	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Vertical Amp. Grid
R72	18KΩ	½	TRC-183-2	BTS-18K	Br.-Gray-Or.	Vertical Amp. Cathode ±10%
R73	150KΩ	½	TRC-154-1	BTS-150K	Br.-Grn.-Yl.	Vertical Amp. Grid "
R74	2.2 Meg.	½	TRC-225-3	BT-2.2 Meg.	Red-Red-Grn.	Voltage Divider " ±5%
R75	820KΩ	1	TRC-824-5	BTA-820K ±5%	Gray-Red-Yl.	Vertical Amp. Plate ±5%
R76	820KΩ	1	TRC-824-5	BTA-820K ±5%	Gray-Red-Yl.	" " " ±5%
R77	5.6 Meg.	½	TRC-565-1	BTS-5.6 Meg.	Grn.-Blue-Grn.	Feedback Network
R78	5.6 Meg.	½	TRC-565-2	BTS-5.6 Meg.	Grn.-Blue-Grn.	Vertical Deflection Load ±10%
R79	5.6 Meg.	½	TRC-565-2	BTS-5.6 Meg.	Grn.-Blue-Grn.	" " " ±10%
R80	100KΩ	1	TRA-104-4	BTA-100K ±5%	Br.-Blk.-Yl.	Horizontal Oscillator Plate ±5%
R81	4700Ω	1	TRA-472-1	BTS-4700	Yl.-Vi.-Red	Horizontal Oscillator Grid
R82	1000Ω	1	TRC-102-1	BTS-1000	Br.-Blk.-Red	Horizontal Oscillator Cathode
R83	220KΩ	1	TRC-224-1	BTS-220K	Red-Red-Yl.	Horizontal Oscillator Grid
R84	1.2 Meg.	1	TRC-125-4	BTS-1.2 Meg.	Br.-Red-Grn.	Horizontal Oscillator Plate
R85	10KΩ	½	TRC-103-1	BTS-10K	Br.-Blk.-Or.	Filter
R86	4.7 Meg.	½	TRC-475-1	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Horizontal Output Grid
R87	4.7 Meg.	½	TRC-475-1	BTS-4.7 Meg.	Yl.-Vi.-Grn.	" " "
R88	47KΩ	2	TRC-473-6	BT-2-47K	Yl.-Vi.-Or.	Horizontal Output Plate ±10%
R89	47KΩ	2	TRC-473-8	BT-2-47K	Yl.-Vi.-Or.	" " " ±10%
R90	4.7 Meg.	½	TRC-475-1	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Horizontal Deflection Load
R91	4.7 Meg.	½	TRC-475-1	BTS-4.7 Meg.	Yl.-Vi.-Grn.	" " "
R92	432	1	TRW-430-5		Yl.-Or.-Blk.	Oscillator Filament Shunt ±10%
R93	602	10	TRW-600-14			Filament Dropping ±10%
R94	75002	2	TRC-753-3		Yl.-Grn.-Red	H.V. Osc. Grid ±5%
R95	682	2	TRC-680-2		Blue-Gray-Blk.	Parasitic Suppressor ±10%
R96	100Ω	½	TRC-101-2		Br.-Blk.-Br.	Filter ±10%
R97	68Ω	½	TRC-680-2		Blue-Gray-Blk.	" " " ±10%
R98	100KΩ	1	TRC-104-4	BTA-100K	Br.-Blk.-Yl.	H. V. Filter ±10%
R99	1 Meg.	½	TRC-105-3	BTS-1 Meg. ±5%	Br.-Blk.-Grn.	Voltage Divider ±5%
R100	3.3 Meg.	2	TRC-335-2	BTS-3.3 Meg.	Or.-Or.-Grn.	" " " ±10%
R101	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	" " "
R102	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	" " "
R103	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	" " "
R104	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	" " "
R105	4.7 Meg.	1	TRC-475-4		Yl.-Vi.-Grn.	Focus Control Shunt-See Note
R106	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	Voltage Divider
R107	2.2 Meg.	1	TRC-225-4		Red-Red-Grn.	" "
R108	3.3 Meg.	2	TRC-335-2	BTS-3.3 Meg.	Or.-Or.-Grn.	" " " ±10%
R109	3.3 Meg.	2	TRC-335-2	BTS-3.3 Meg.	Or.-Or.-Grn.	" " " ±10%
R110	680Ω	1	TRW-681-5	BW-2-680		Filter ±10%
R111	18Ω	½	TRW-180-10			Surge Limiter ±10%
R112	1200	1	TRA-122-4	BW-1-1200	Br.-Red-Red	Filter

Note-Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSN PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T1	2.6KΩ	3.3Ω	250Ω	.6Ω		A-3330*	T22845*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

TRANSFORMER (HIGH VOLT. OSC.)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
T2		0	382	02	TLF-137D			

SPEAKER

ITEM No.	RATING: FIELD RES.	RATING: V. C. IMP.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.2Ω	TSP-46-B	ST-113 Mod. P4-X	4A1	Fabricate new mounting bracket Remount output transformer
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 m^3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
L1	.074A	612	2.8 Henries	TTR-100-D	C-2304		C-2974	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

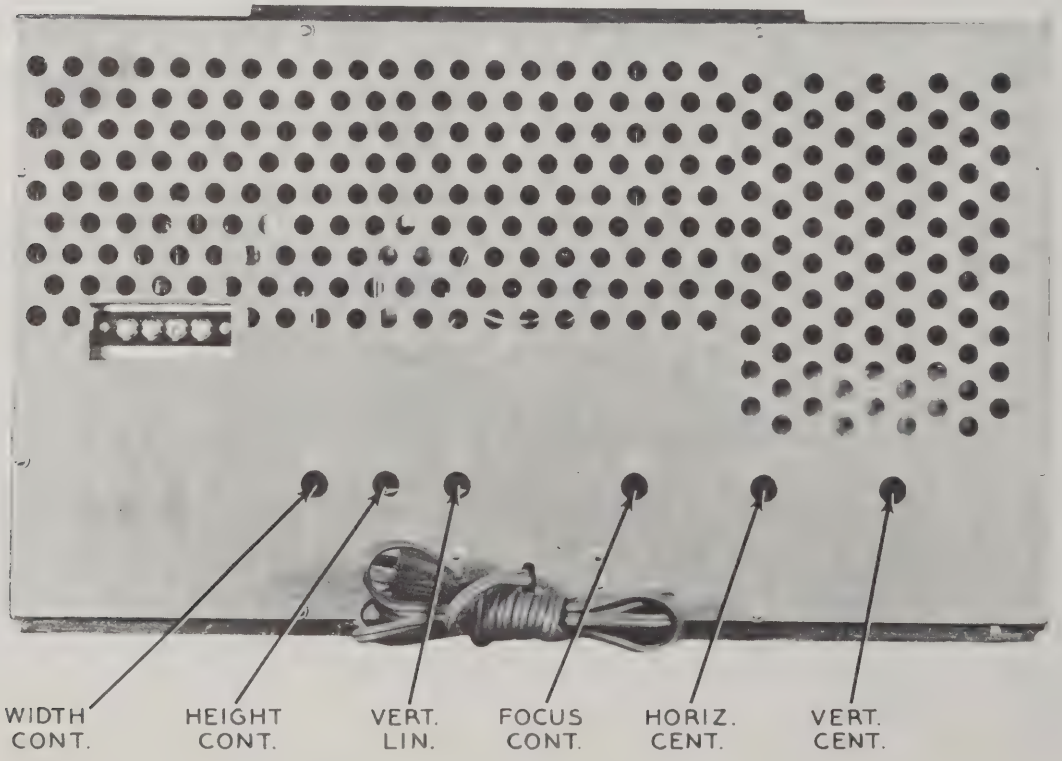
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TELE-TONE PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2	Ant. Input Coil	.2Ω CT		TLF-139-D		
L3	RF Strap Inductor	0Ω		TLF-138-D		
L4	RF End Ind.	0Ω		TLF-143-D		
L5	" " "	0Ω		TLF-143-D		
L6	RF Plate Choke	0Ω		TLF-140-D		
L7A	Osc. Coils	0Ω		TLF-120-1D		Channel 2
B	" "	0Ω		TLF-120-2D		Channel 3
C	" "	0Ω		TLF-120-3D		Channel 4
D	" "	0Ω		TLF-120-4D		Channel 5
E	" "	0Ω		TLF-120-5D		Channel 6
F	" "	0Ω		TLF-120-6D		Channel 7
G	" "	0Ω		TLF-120-7D		Channel 8
H	" "	0Ω		TLF-120-8D		Channel 9
I	" "	0Ω		TLF-120-9D		Channel 10
J	" "	0Ω		TLF-120-10D		Channel 11
K	" "	0Ω		TLF-120-10D		Channel 12
L	" "	0Ω		TLF-120-10D		Channel 13
L8	IF Coil	0Ω		TLF-116-D		
L9	1st Video IF	.2Ω		TLF-117-D		
L10	2nd " "	.2Ω	.2Ω	TLF-118-D		
L11	3rd " "	.2Ω	.2Ω	TLF-119-D		
L12	Peaking Coil	6.5Ω		TLF-133-D		Wound on 33KΩ resistor
L13	" "	15Ω		TLF-134-D		
L14	" "	6Ω		TLF-135-D		Wound on 22KΩ resistor
L15	" "	15Ω		TLF-136-D		" " 15KΩ "
L16	Sound IF Trap	1.5Ω		TLF-114-D		
L17	Ratio Det.	4Ω	.3Ω	TLF-142-D		
L18	Fil. Choke	0Ω		TLF-144-D		
L19	" "	0Ω		TLF-144-D		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA TELE-TONE PART No.			NOTES
M1	.160 A.	TSR-100			

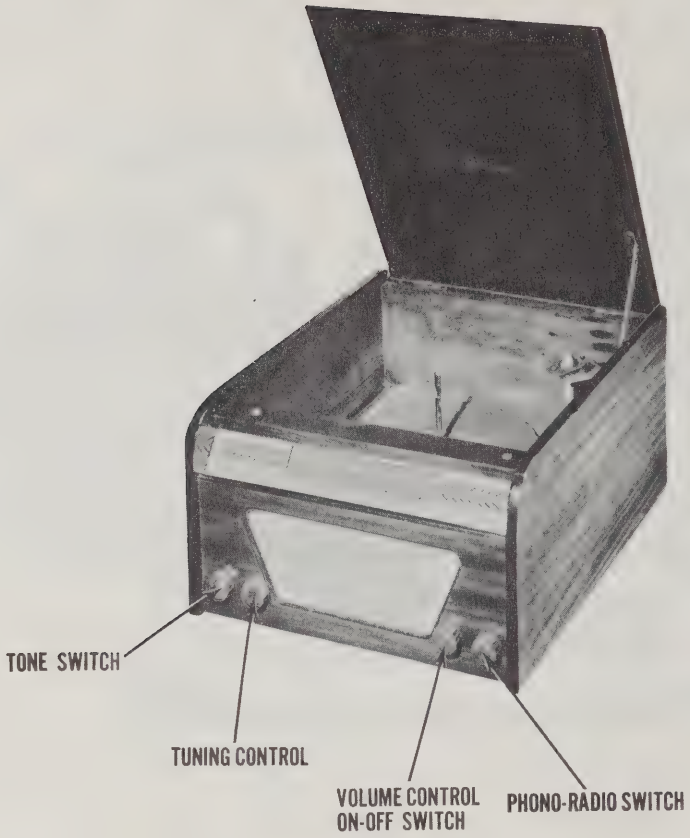
MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M2	Band Switch	TSW-102D	
	Knob	TKN-100	Outside
	"	TKN-101	Inside
	"	TKN-102D	Tuner
	"	TKN-103	Volume Control
	"	TKN-104D	Tuner, Outside
	Safety Glass	TGL-100D	Picture Tube
	Escutcheon	TMS-121D	
	Bracket	THS-274D	Antenna
	Plug	TPL-150	Interlock
	Cabinet	TCB-100D	



CABINET-REAR VIEW

TRAV-LER
MODEL 6050



TRAV-LER
MODEL 6050

TRAV-LER MODEL 6050

TRADE NAME	Trav-ler, Model 6050
MANUFACTURER	Trav-ler Radio & Television Corp., 571 W. Jackson, Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1720KC RATING .27 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Use isolation transformer if available. If not, connect a .1MFD cap. in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to rear stator of tuning cap. Low side to B-. (Loop disconnected.)	455KC	Tuning cap. fully open	Across voice coil.	A1, A2 A3, A4	Connect a 20KΩ resistor across loop terminals. Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	"	"	1720KC	"	"	A5	Adjust for maximum output. Remove 20KΩ resistor..Install receiver in cabinet, connect loop leads and phono plugs. Proceed with step 3.
3.		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TRAV-LER MODEL-6050

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8R	
2	IF Amp.	12SK7GT	12SK7GT	7R	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	EC-14	PRSA150/40-40	EZ44315C*	DSB-403020-150	TA-303	Filter Red
B	40	150		PRS 150/20				Filter Blue
C	20	150						Filter Yellow
7	.1	400	PC-8	484-1	GT2P1	ST-4-1	72P2	Line Isolation
8	.05	400	PC-5	484-05	GT4S5	ST-4-05	TC-15	Rectifier Bypass
9	.01	400	PC-7	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
10	.05	400	PC-5	484-05	GT4S5	ST-4-05	TC-15	Tone Compensation
11	.01	400	PC-7	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
12	.01	400	PC-7	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
13	.05	400	PC-5	484-05	GT4S5	ST-4-05	TC-15	Phono. Isolation
14	.25	200	PC-4	484-25	GT2P25	ST-2-25	TC-2	Bias Filter
15	.05	200	PC-2	484-05	GT2P2	ST-4-05	TC-15	AVC Filter
16	500	500	MC-5	1468-0005	5W5T5	MO.5-35	1FM-35	AF Plate Bypass
17	100	500	MC-2	1468-0001	5W5T1	MO.5-31	1FM-31	Diode Filter
18	500	300	MC-5	1468-0005	5W5T5	MO.5-31	1FM-31	Phono. Tone Comp. Cer.
19	50	300	MC-4	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.

* Omit bypass section.

CONTROLS

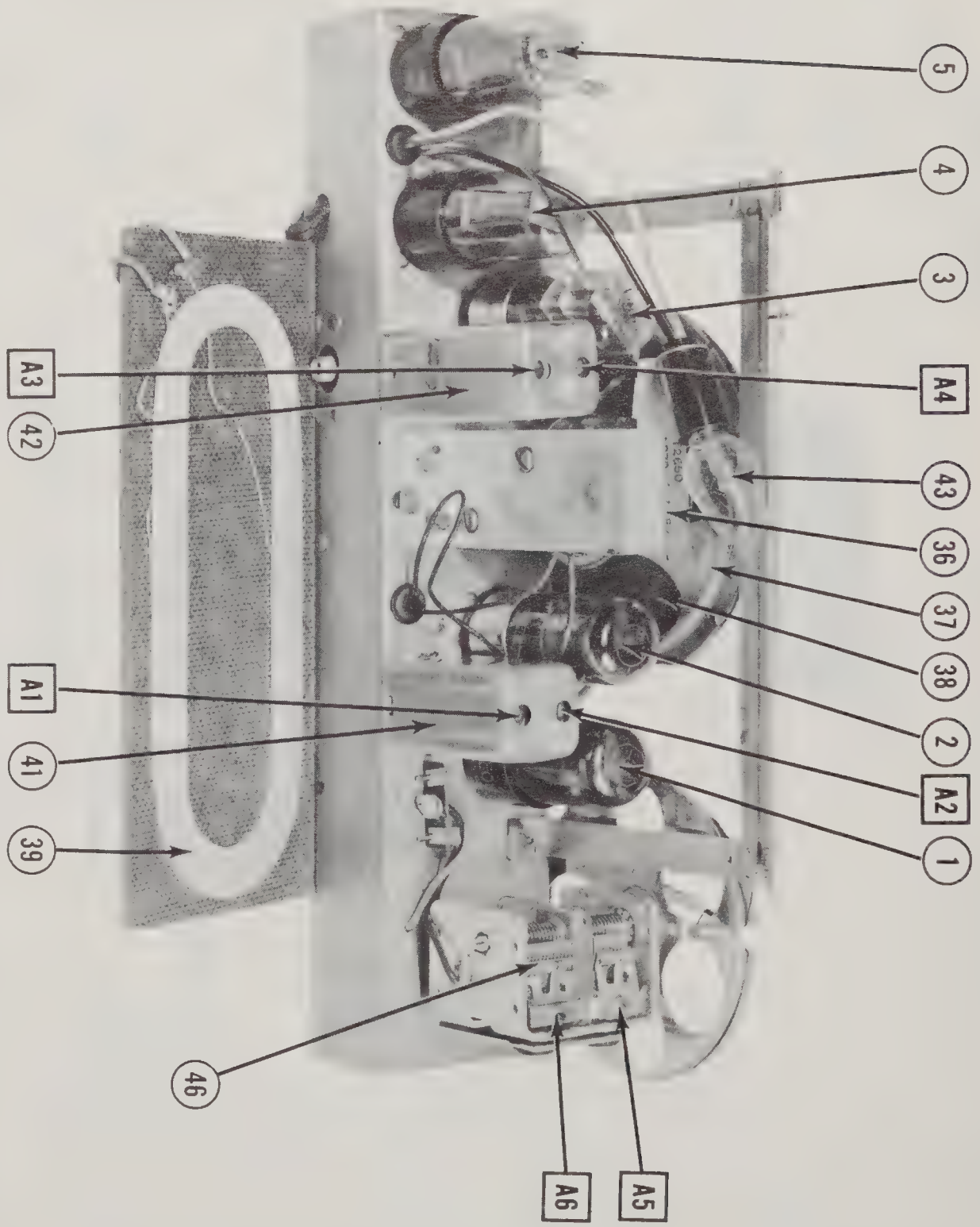
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	1 Meg.	½	VC-4	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 20A Per Instructions.
C	Switch		" "	41	Sw-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES	
21	22KΩ	½	IF-9	BTS-22K	Red-Red-Or.	Oscillator Grid
22	3.3 Meg.	½	IF-23	BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network
23	47KΩ	½	IF-10	BTS-47K	Yl.-Vi.-Or.	Diode Filter
24	2.2 Meg	½	IF-13	BTS-2.2 Meg.	Red-Red-Grn.	AF Grid
25	470KΩ	½	IF-11	BTS-470K	Yl.-Vi.-Yl.	AF Plate Load
26	470KΩ	½	IF-11	BTS-470K	Yl.-Vi.-Yl.	Output Grid
27	2200Ω	½	IF-15	BTS-2200	Red-Red-Red	Tone Compensation
28	1000Ω	1	IF-42	BTA-1000	Br.-Blk.-Red	Filter
29	470Ω	½	IF-1	BTS-470	Yl.-Vi.-Br.	Filter
30	33Ω	½	IF-17		Or.-Or.-Blk.	Surge Limiter
31	33Ω	½	IF-17		Or.-Or.-Blk.	Rectifier Ballast
32	47KΩ	½	IF-10	BTS-47K	Yl.-Vi.-Or.	Bias
33	220KΩ	½	IF-20	BTS-220K	Red-Red-Yl.	Line Isolation
34	1.2 Meg.	½	IF-12	BTS-1.2 Meg.	Br.-Red-Grn.	Tone Compensation
35	220KΩ	½	IF-20	BTS-220K	Red-Red-Yl.	" " See Note

Note: Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	2400Ω	3.3Ω	235Ω tap @ 6.3Ω	.6Ω	Part of SPK-12	A-3330#		A-3031#	# Bend mounting tabs d own. File out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-105 †		
37	PM	3.3Ω	SPK-12	MOD P5-X	5A15 †	† Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
38	4-½"	9/16"				

R F COILS

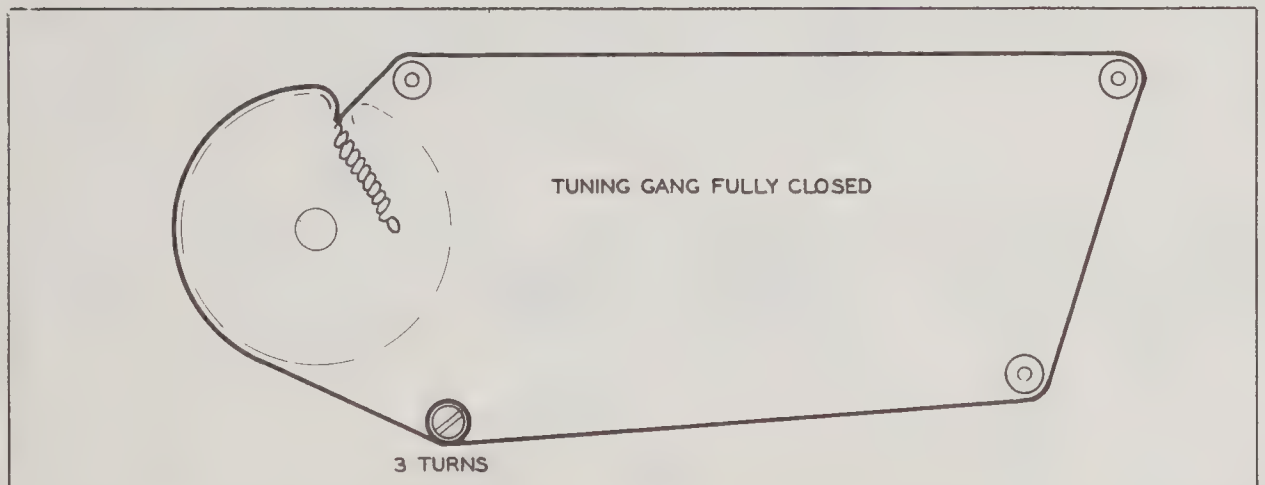
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
39	Loop ant.		2.4Ω	LL-17		
40	Osc. coil	.8Ω	6Ω	LO-14	14-1060	
41	Input IF	25.5Ω	26Ω	LI-6	16-6666	
42	Output IF	21.5Ω	22Ω	LI-7	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRAV-LER PART No.		
43	Screw	120V			PB-2		120V. 7W Lamp

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
44	Switch	SW-1	Phono-Radio
45	"	SW-2	Tone
46	2 Gang Var. Cap	GC-5	(27-467 MMF, 29-191 MMF)

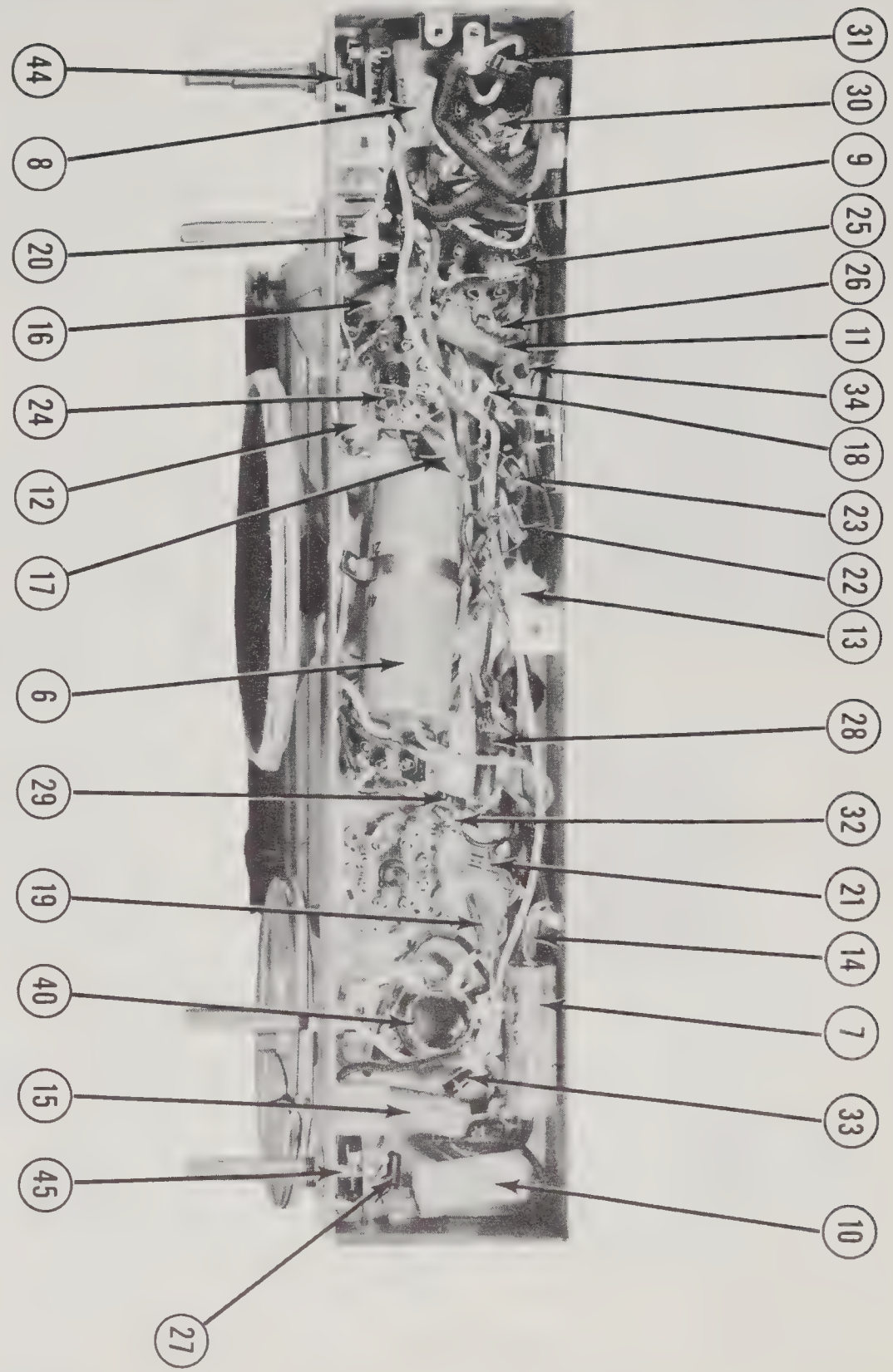


DIAL CORD DRIVE

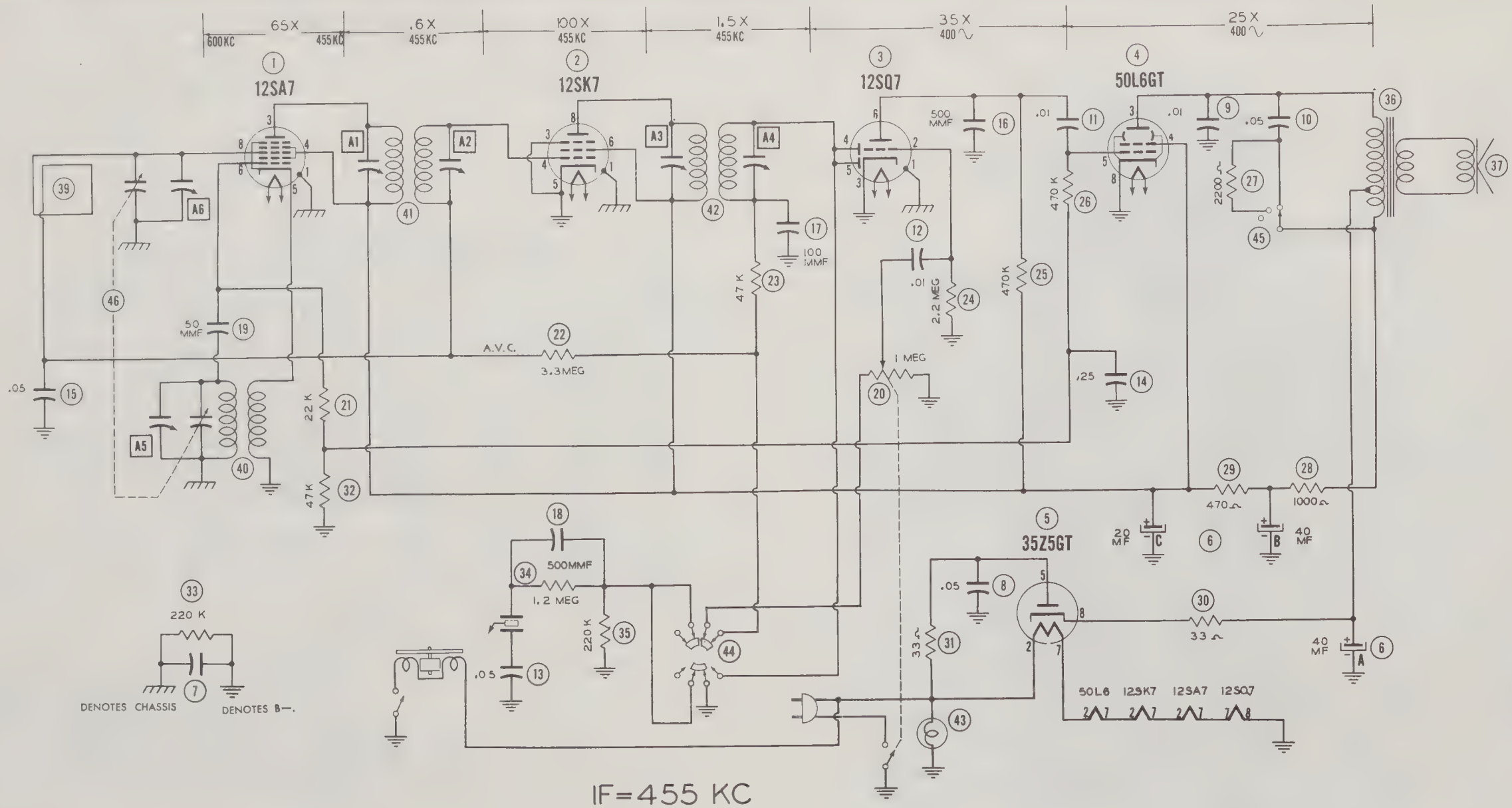
TRAV-LER MODEL-6050

DATE 2/49-494-23 SET # 56 FOLDER #23

CHASSIS—BOTTOM VIEW



TRAV-LER MODEL-6050



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VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	25VAC	85VDC	85VDC	-9VDC§	0V.	13VAC	-.1VDC
2	12SK7GT	0V.	36VAC	0V.	-.1VDC	0V.	85VDC	25VAC	85VDC
3	12SQ7GT	0V.	-.1VDC	0V.	-.1VDC	-.1VDC	45VDC	13VAC	0V.
4	50L6GT	0V.	85VAC	110VDC	85VDC	-.2VDC	-.2VDC	36VAC	0V.
5	35Z5GT	0V.	117VAC	107VAC	0V.	113VAC	118VDC	85VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	220KΩ	24Ω	41KΩ	41KΩ	70KΩ	.8Ω	12Ω	4.3 Meg.
2	12SK7GT	220KΩ	34Ω	0Ω	4.3 Meg.	0Ω	41KΩ	24Ω	41KΩ
3	12SQ7GT	220KΩ	2.2 Meg.	0Ω	1 Meg.	1 Meg.	510KΩ	12Ω	0Ω
4	50L6GT	220KΩ	70Ω	40KΩ	42KΩ	470KΩ	47KΩ	34Ω	0Ω
5	35Z5GT	220KΩ	90Ω	85Ω	INF.	110Ω	40KΩ	70Ω	40KΩ

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494-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

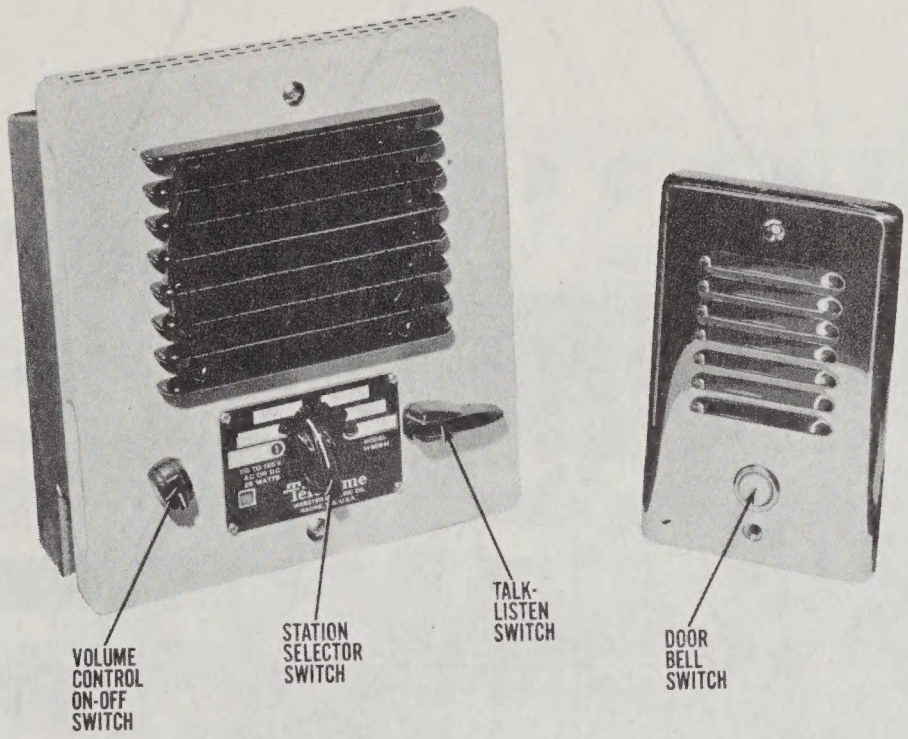
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

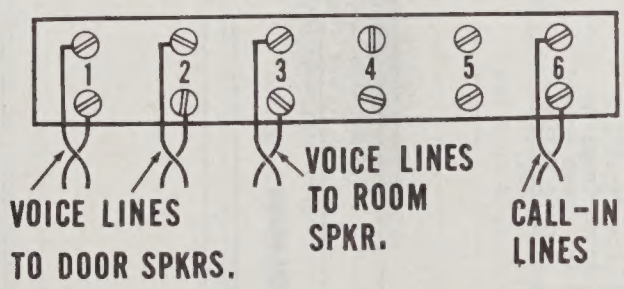
WEBSTER (TELEHOME) MODEL W606M

WEBSTER (TELEHOME) MODEL W606M



WEBSTER (TELEHOME) MODEL W606M

TRADE NAME	Webster (Telehome), Model W606M
MANUFACTURER	Webster Electric, Racine, Wisconsin
TYPE SET	AC-DC Operated Intercommunication System with Door Speaker Model 3D45 and Room Speaker Model 5D45 (Optional).
TUBES (THREE)	Types 12BA6 AF Amp., 50B5 Power Output, 35W4 Power Output.
RATING	.2 Amp @ 117 Volts AC
POWER SUPPLY	110-125 Volts AC-DC



Voice lines are connected to terminal strip on back of master unit chassis. The terminal strip is numbered to correspond with selector switch positions.

To connect door speaker, connect pair of twisted wires from #1 on terminal strip to terminals on door speaker, bringing wires through larger opening in back of door speaker case and soldering to terminals on speaker. Door bell wires are brought through smaller hole on door speaker case and connected to push-button switch. If another door speaker is used connect as above, but to terminal #2 on master unit. The push-button switches for the door bell may be connected in parallel so that either may be used.

If room speakers are used, voice wires will be connected to other terminals on master unit with terminal #6 reserver for call-in wires from all room speakers.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

WEBSTER (TELEHOME)
MODEL W606M

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WEBSTER PART No.	STANDARD REPLACEMENT		
1	AF Amp.	12BA6	12BA6	7BK	
2	Power Output	50B5	50B5	7BZ	
3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WEBSTER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
4A	50	150		AF1010D4A	UP5515C	DY-306	EL352	■ Filter
B	30	150						▲ Filter
C	10	25						Cathode Bypass
5	.1	400		484-1	DT4P1	ST-4-1	TC-1	Line Isolation
6	.001	600		684-001	DT6D1	ST-6-001	TC-21	Audio Coupling
7	.005	600		684-005	DT6D5	ST-6-005	TC-25	AF Screen Bypass
8	.01	400		484-01	DT4S1	ST-4-01	TC-11	AF Grid Filter

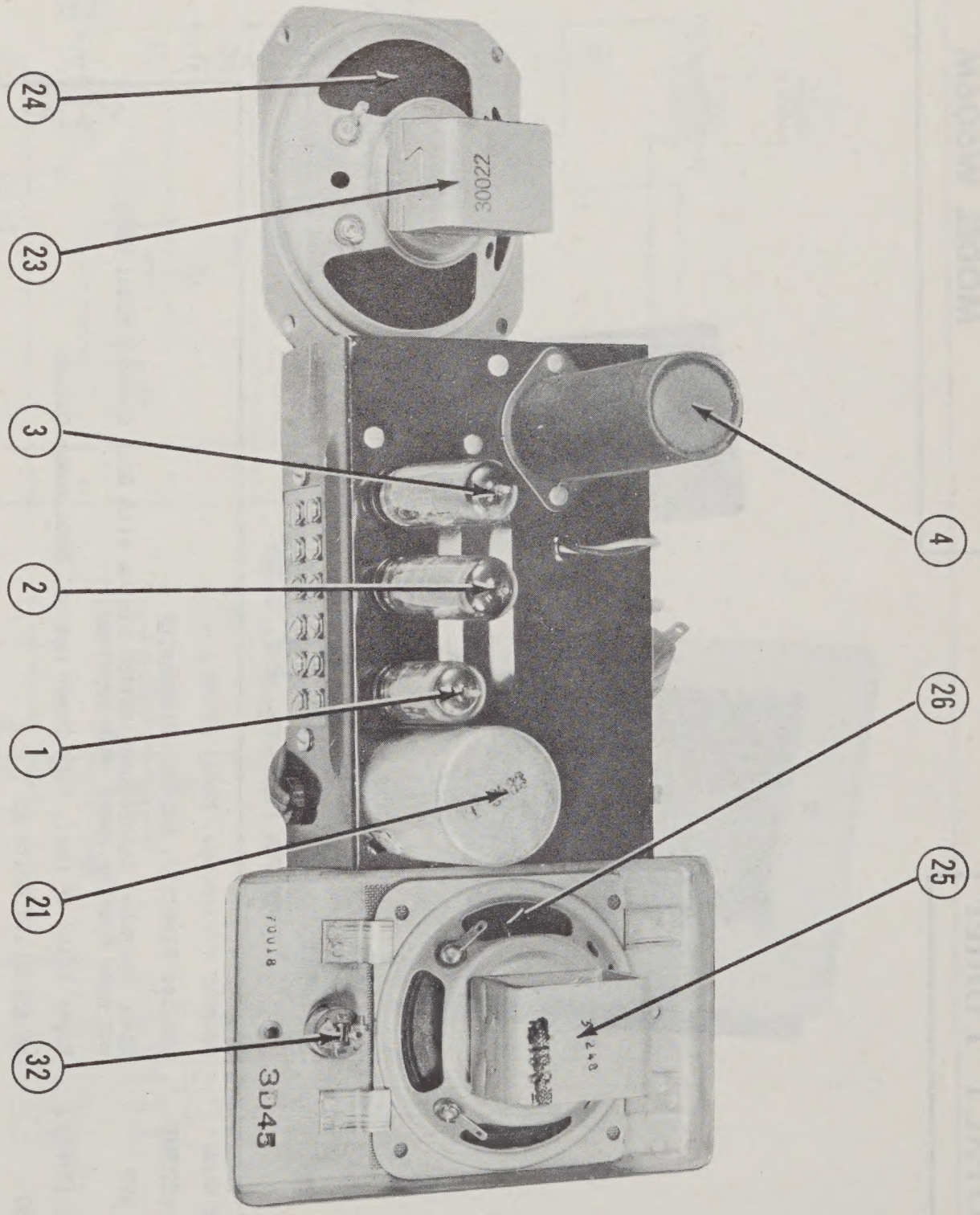
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESIST-ANCE	WATTS	WEBSTER PART No.	IRC PART No.	CLAROSTAT PART No.	
9	500KΩ	½				Volume Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	WEBSTER TELEHOME PART No.	IRC PART No.		
10	150KΩ	½		BTS-150K	Br.-Grn.-Yl.	AF Grid
11	510Ω	½		BTS-470	Grn.-Br.-Br.	AF Cathode
12	1.4 Meg.	½		BTS-1.5 Meg.	Br.-Yl.-Grn.	AF Screen
13	510KΩ	½		BTS-470K	Grn.-Br.-Yl.	AF Plate Load
14	51KΩ	½		BTS-47K	Grn.-Br.-Or.	Bias
15	160Ω	½		BW-½-150	Br.-Blue.-Br.	Output Grid
16	5100Ω	½		BTS-4700	Grn.-Br.-Red	Filter
17	200Ω	5		AB-200		Line Dropping
18	240Ω	½		BW-½-220	Red-Yl.-Br.	Voltage Dropping
19	51Ω	½			Grn.-Br.-Blk.	Rectifier Ballast
20	100Ω	½		BW-½-100	Br.-Blk.-Br.	Input Transformer Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER INPUT

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WEBSTER TELEHOME PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
21	34Ω	48KΩ	1.4Ω	1280Ω	W-3533				

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WEBSTER TELEHOME PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
22	2650Ω	50Ω	300Ω	4.3Ω	W-3534				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WEBSTER PART No.	JENSEN PART No.	QUAM PART No.	
23	FIELD PM	VC IMP. 53Ω	30022	ST-739 MOD P4-X		
24	CONE DIA. 4"	VC DIA. 9/16"				
25	FIELD PM	VC IMP. 50Ω	30248			
26	CONE DIA. 3-3/8"	VC DIA. 9/16"				
27	FIELD PM	VC IMP. 48Ω	30237#	ST-740 MOD P5-X		# Obtainable in room unit under part # 5D45 (optional).
28	CONE DIA. 4-7/8"	VC DIA. 9/16"				

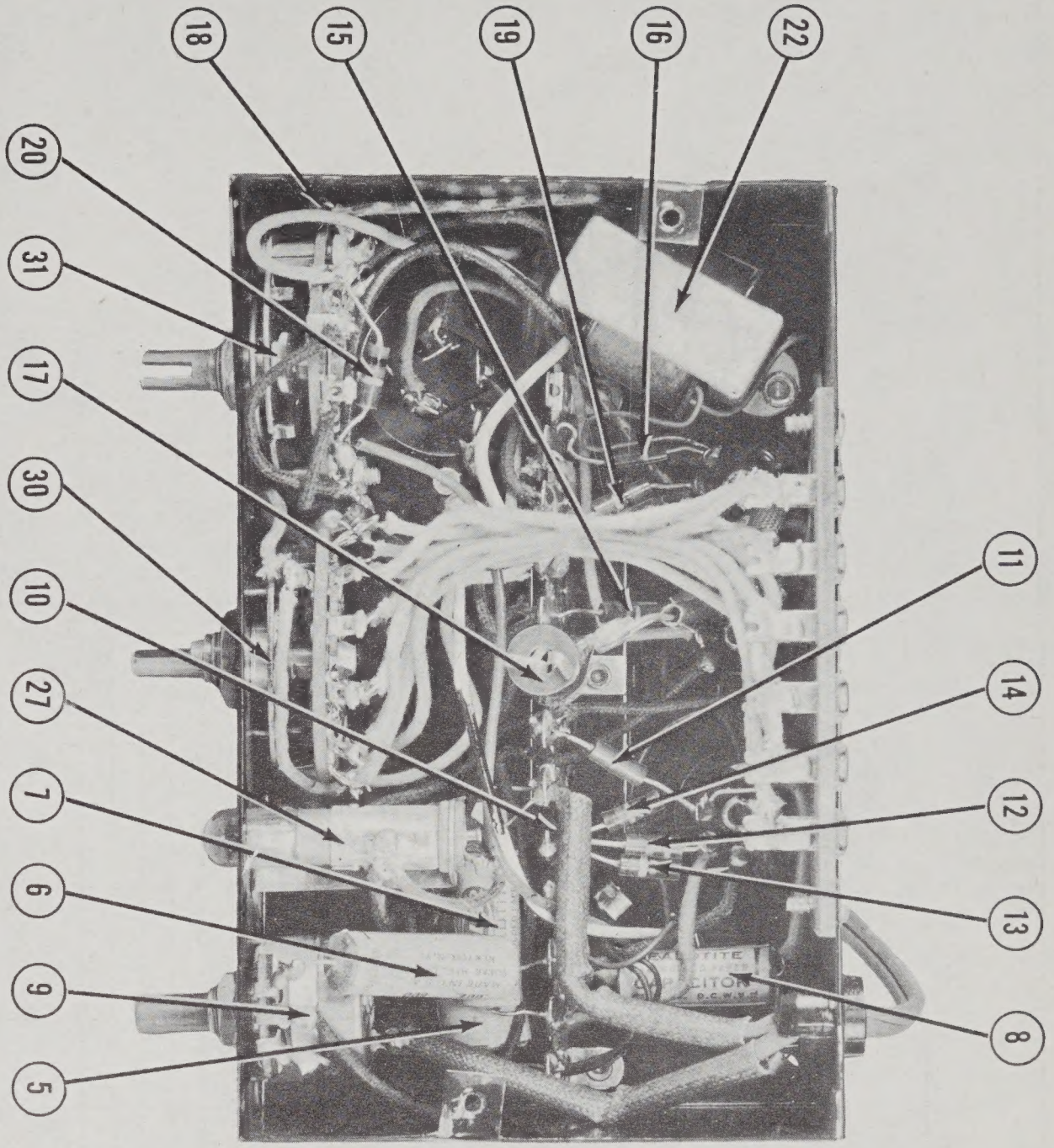
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WEBSTER PART No.		
29	Bayonet	6-8V	0.15A	Brown			Type #47.

MISCELLANEOUS

ITEM No.	PART NAME	WEBSTER PART No.	NOTES
30	Switch	S6919	Selector
31	"	S6925	Talk-Listen
32	"	S4922	Door Bell
	Knob	30102	Volume
	"	30001	Selector
	"	30104	Talk-Listen

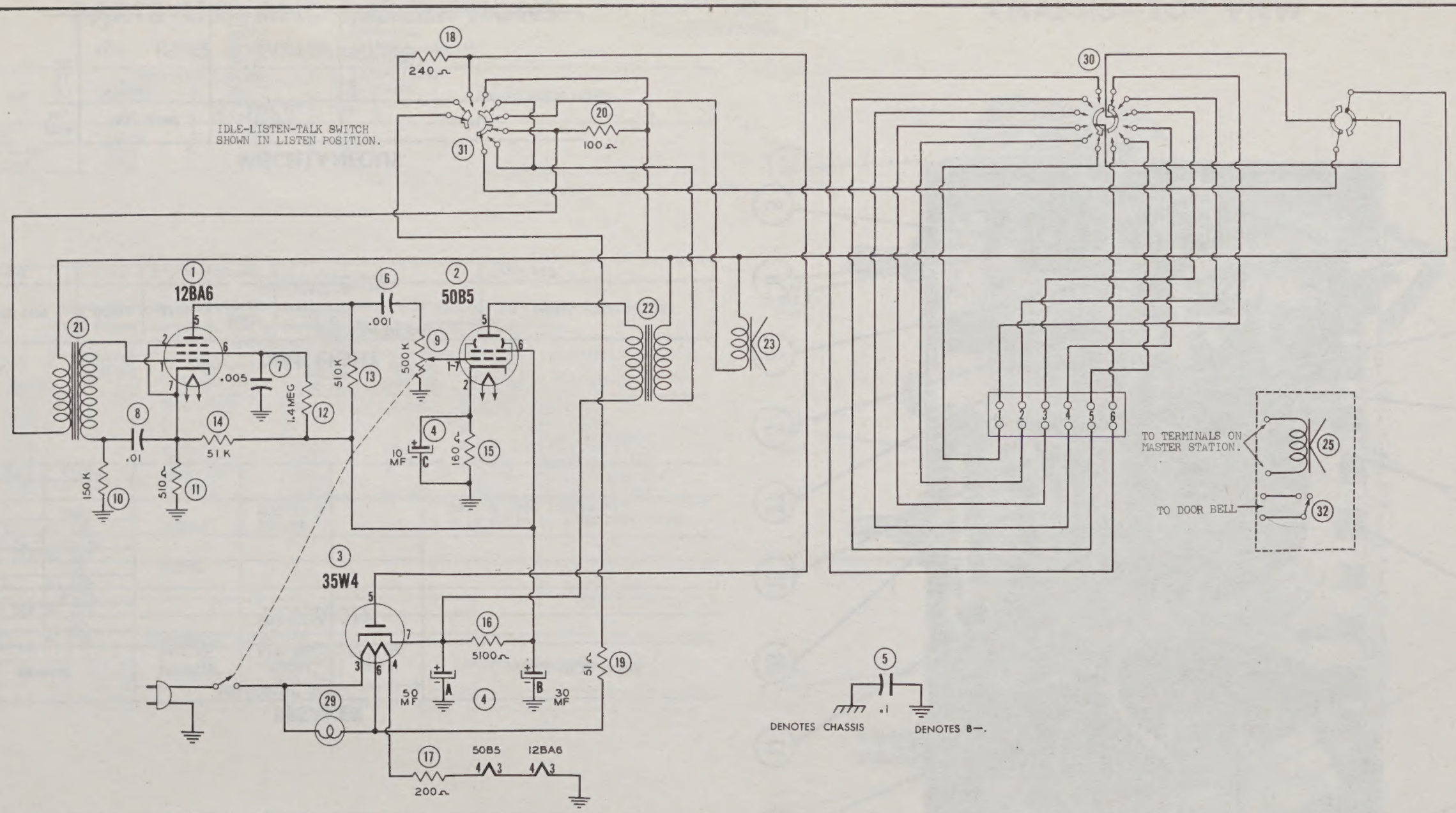
CHASSIS—BOTTOM VIEW



DATE 2/49-494-24 SET # 56 - FOLDER #24

WEBSTER (TELEHOME)
MODEL W606M

WEBSTER (TELEHOME)
MODEL W606M



VOLTAGE READINGS

V & R TAKEN WITH TALK-LISTEN SWITCH IN LISTEN POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	0V.	.8V.DC	0V.	11V.AC	20V.DC	6V.DC	.8V.DC
2	50B5	0V.	4.8V.DC	11V.AC	57V.AC	90V.DC	75V.DC	0V.
3	35W4	0V.	0V.	87V.AC	117V.AC	103V.AC	114V.AC	97V.DC

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	150KΩ	510Ω	0Ω	11Ω	560KΩ	1.4 Meg	510Ω
2	50B5	500KΩ	160Ω	11Ω	60Ω	50KΩ	55KΩ	500KΩ
3	35W4	INF.	INF.	260Ω	300Ω	525Ω	290Ω	50KΩ

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.